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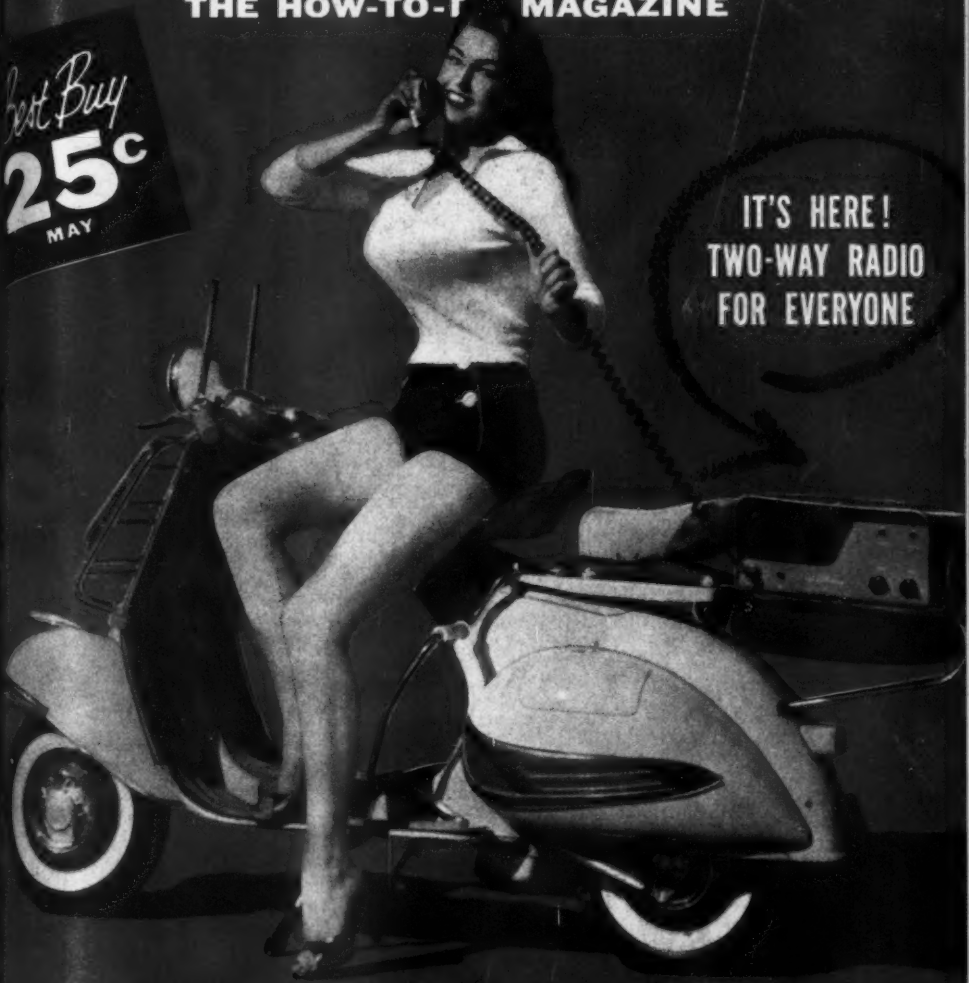

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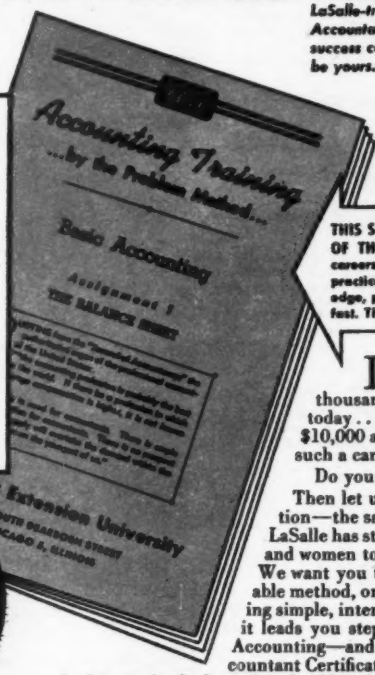

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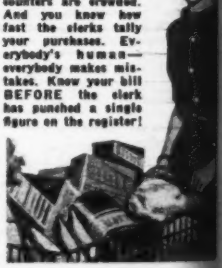

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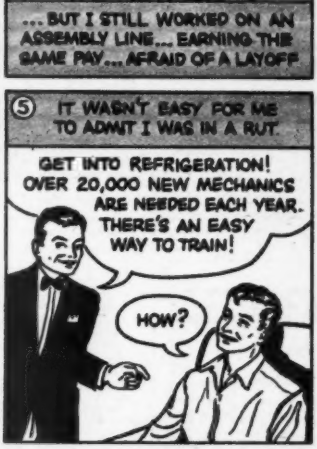

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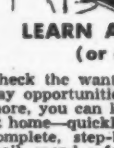

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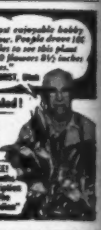

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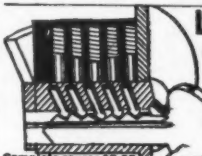

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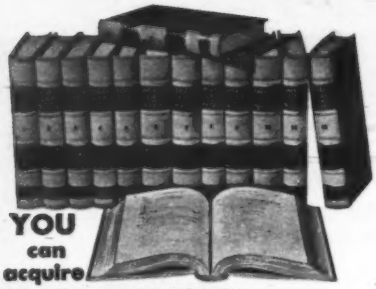

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To coordinate both trade and consumer campaigns in your town, we provide you with tie-in materials as ad reprints, mailing pieces, display cards plus others.

We Help You Grow

YOUR personal success is of the utmost importance to Hdqtrs, for as you grow so grows the Duraclean Dealer organization. Thus, your initial training is only the start of a continuous assistance program to help build your business. When you write or phone Hdqtrs, you receive prompt, expert counsel from specialists. Among 25 regular services you receive are conventions, regional conferences, product development, tested ads, monthly magazines, etc. Cooperative program and customer satisfaction built this world-wide organization.

Unique Process

Duraclean cleans by *absorption*, utilizing electric Foamovator (shown above) which produces a light aerated foam. When spread onto fibers or fabrics, chemicals in foam safely and gently loosens soil and absorbs it like a blotter absorbs ink; thus, eliminating scrubbing, soaking, shrinkage, color run or dry rot. This unique process revitalizes fibers, restores color and adds years to their life. "On location" cleaning also permits use of furnishings again the same day. Customers are so elated they become your best salesmen. You also provide 4 other services to increase profits: **soil retarding, mothproofing, flameproofing** and **spotting.** As a specialist you provide a complete service.

What Dealers Say

W. Lockhill (St. Louis): My 28th year! Began during depression and built business on good service.

D. Chilcott (N. Platte): Duraclean say gross $9.00 per hour. I gross up to $12.00. Many dealers do much better.

M. Lyons (Chgo): 3rd year should hit $100,000; 2nd was $60,000; 1st was $40,000. Hdqrs help make it possible.

E. Roddey (Hampton, Va.): Did $600.00 first 12 days in January. My business keeps growing each month.

A. Wilson (Tulsa): Made $1,299 this month working alone. Duraclean outperforms all competitors.

Backed by Famous Awards

These two important honors conferred on Duraclean give PROOF of your superior services. As a Duraclean Dealer, you will be the only cleaning service in town backed by both these famous seals. No wonder customers buy Duraclean so quickly!

What Manufacturers Say

". . (Duraclean) standards in keeping with service to which . . carpets and consumer are entitled." —*Avisco* (*American Viscose Corp*)

". . superior to any on-location process with which I'm familiar." —*President, Modern Tufting Co.*

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Address mail to: MECHANIX ILLUSTRATED, Letters Editor, 67 West 44th Street, New York 36, N. Y.

• *Nothing New*

It seems to me that Dr. Binem's Logography (Talking By Numbers, Feb. MI) is a rehash of an old idea for sending Chinese by telegraphy. It might prove useful in writing a dictionary for people who don't know the alphabet.

Charles H. Learned
Stockton, Calif.

• *Admiral Rickover's Puzzle*

Admiral Hyman Rickover says that Swiss fifth-graders can solve this one. A stock of pamphlets is in three piles. First has one-sixth of them. Second has several fifths of them. Third has four pamphlets. What is the smallest whole number the total number of pamphlets could be? You'll find the answer at the end of this column.

• *Who Has A Pea-Sheller?*

I'm looking for a pea-sheller such as the one I used as a boy—a small unit that attaches to a chair back or table edge. Can any MI reader help me?

Jesse J. Tromater
203 Lumpkin
Texarkana, Texas

• *Just Lucky*

I like your magazine very much. I get a copy every month from my newspaper stand. I do appreciate the advice you gave in it to take care of my car. I wonder if I can buy some car pictures because I save pictures and I haven't got the chance to take good pictures like you do. I would like to get photos like I have seen in Tom McCahill test. If you're allowed to sell them could you let me know. Thanks again. Excuse my English I am not very good because I am French.

John St.-Germain
RCAF Stn. St. Hubert
Quebec Province
Canada

That's all right—wish we had your excuse. Sorry—we can't purvey pictures except as they appear in the book.

• *March Mystery Solved*

The answer is 4 cows and 31 chickens.

Ted Jardine
Palo Alto, Calif.

• *Overall Advice*

Where, oh where can I find a pair of striped carpenter's shorts like the ones MIMI wears? That's all I've heard about since your Sept. issue came out.

J. Cruikshank
Donnellson, Iowa

Well, anyway, we advise against what our nutsy Aunt Susie did—cut off Uncle Herm's overalls at the knee. Our nifty new products tester advises each girl to sew her own.

[*Continued on page* 25]

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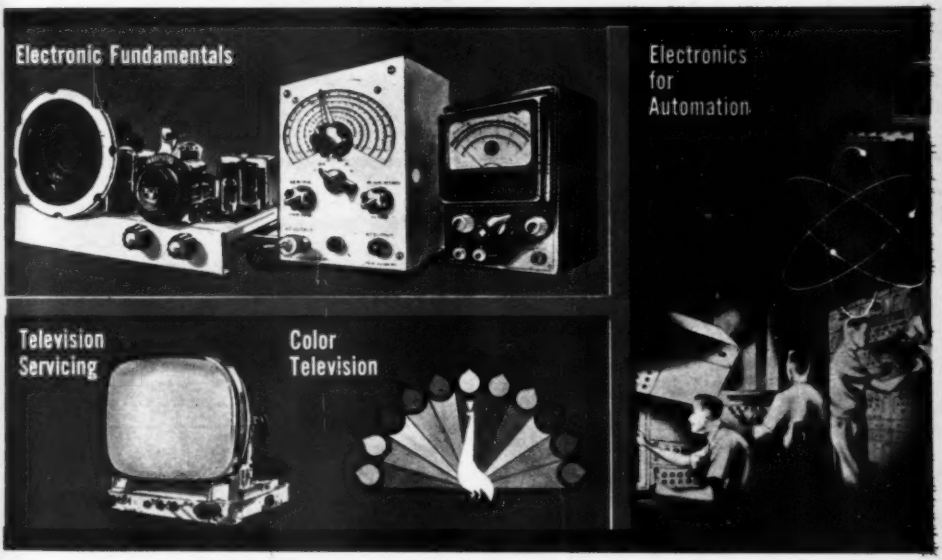

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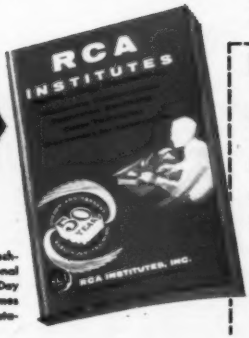

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Invention Clinic

Joseph H. Kraus

In this column each month Mr. Kraus will answer as many letters as space permits on those subjects he feels to be of widest general interest. Time does not allow him to reply to any letters except those printed here. Address your questions to the Invention Clinic, *Mechanix Illustrated*, 67 West 44 St., New York 36, N. Y.

Lubricating Device

Isa E. Otto of Castro Valley, Calif., sends a copy of his recent patent on a continuous lubricating device. What is the market for this invention?

A device of this kind should be effective on some types of machinery; on others it merely would waste lubricant. You should try to get this accepted by machinery manufacturers.

Fish Strike Signal

Fred A. Patricello of Mount Vernon, N. Y., sends drawings of his pending patent on a fish strike signal. Is there a market for it?

Any light rod will bend nearly double before this signal sounds. Then before you can set the hook you must release the line from the signal trigger. Nearly anyone can design a signal; the trick is to get one to signal when the fish merely nibbles. And the rod should remain free for casting or reeling in. Nevertheless, I think this item might be made saleable. You could cut production costs by using rivets, metal tabs or spot welds. You could dispense with your present trigger and redesign the trigger stop so that it will serve both to close the circuit and to release the line automatically. The best approach would be to produce and distribute the item yourself.

End-Of-Paper Signal

Richard A. Baker of Leisure City, Fla., sends patent drawings and description of a device to be attached to a typewriter that will give an audible signal when the end of the paper has been reached. It will handle legal, standard, whole-letter or half-letter-size sheets. What are its merits and saleability?

Your chances seem good if you can manage to put the product on the market at a reasonable price, make it attractive and provide instructions so that it can be fitted easily to most typewriters. You might give more thought to other methods. You could get the same signal with a simple snap-on collar and a spring, which would be a much cheaper item to produce.

Red Tape And Amendments

W. Howard Henderson, M.D., Chester, Pa., says that a friend mentioned the red tape connected with a patent and said something concerning "amendments." Would we please explain what this word means in relation to a patent?

Forget your friend's advice and place your invention in the hands of a competent patent attorney. Let him worry about amendments, if necessary. If he explains the procedure he needs to follow, you will discover that the "red tape" is an understandable time lag which affects everyone. Or get a copy of Rules

[*Continued on page* 20]

INVENTOR'S TIP OF THE MONTH

Recipe for immediate success: develop a chemically-treated sheet that will pick up a copy of any page it is placed on—without any special equipment.

Several types of office machines produce results of this sort, but duplicating large work or copying from a rare book that cannot be taken from its special room in a library remains difficult or impossible.

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

The firm of McMorrow, Berman & Davidson, with offices in Washington, D. C., is qualified to take the necessary steps for you. We can make a preliminary search on your invention, advise you whether we think it can be patented, and prepare your application for patent.

Unless you are fully familiar with the U. S. Patent Laws, we recommend that you engage the services of a Registered Patent Attorney to protect your interests. The patent laws are *your* laws. A patent gives you the right to prevent others from making, using or selling the invention claimed in your patent for a period of 17 years.

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Invention Clinic

[*Continued from page* 18]

of Practice from the U. S. Patent Office, Washington 25, D. C.; price, 50 cents. In the section on Amendments (65), you will find: "Whenever, on examination, any claim of an application is rejected for any reason whatever, the applicant will be notified thereof . . ." and (68) "The applicant has a right to amend before or after the first rejection or action. . ." If you have something really original you may never have the matter of amendments brought to your attention.

Telescopic Jig Saw

V. Holtslaw of Perth Amboy, N. J., sends a design for a telescopic jig saw. What is its sales potential?

A large jig saw can be used for small work, too. So there is no advantage to a saw that needs to be rebolted each time a size adjustment is made. The telescopic feature is likely to make the saw more expensive than one with a larger throat.

Segmented Key

Elmer D. Longcor of Hartford, Conn., sends a design for a key that leaves its lower part in the lock, thus preventing the use of skeleton keys. What is our opinion?

It sure makes it a lot easier for the intruder. All he needs to do is to insert any long, small-threaded screw into the key section and turn the lock with its own key. With this arrangement why should anyone need a skeleton key?

Wood Polisher

George A. Warmington of Winnepeg, Manitoba, Canada, wants to know where he can

[*Continued on page* 25]

INVENTORS

Send for PATENT INFORMATION Book and INVENTOR'S RECORD without obligation

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HOW TO SOLVE THIS OFFICIAL PUZZLE

1. First identify the object shown below.
2. Enter the name of this object somewhere in the puzzle frame.
3. Then select other words from the Official Word list to complete a solution to this puzzle. Three words must read across and three words must read down. Each of the letters used is worth a certain number of points as determined from the Table of Official Letter Values. Add up the Letter Values for the nine letters used and you've got a Total Score for this Official Puzzle. The idea is to get the highest score possible.

TOTAL SCORE

OFFICIAL WORD LIST			
ABB	BEG	DUN	NET
ACE	BIS	DUO	ORA
ADD	BOO	EAT	ORE
ADZ	DEN	EGO	PUP
AGE	DID	ERA	SEA
ALA	DIE	GET	TEA
ALB	DIG	HUM	TON
ATE	DOE	ICE	TOO
BAT	DOG	JUS	ZOO
BED	DUG	LOO	

OFFICIAL LETTER VALUES			
A	10	N	10
B	10	O	10
C	5	P	5
D	10	Q	9
E	10	R	10
F	7	S	2
G	10	T	10
H	9	U	8
I	3	V	7
J	1	W	5
K	8	X	4
L	10	Y	2
M	6	Z	10

EASY RULES

1. ENTRY COUPON. Send in your solution on one of the Free Entry Coupons below. 3 words must read Across and 3 words must read Down. One of the words used must be the identity of the object illustrated in the Official Puzzle. Each of the 9 letters used is worth a certain number of points—add them up and you've got your score. That's right—add the values for the 9 letters—but add them only once as shown in the sample! The 6 words must be from the Word List—the Letter Values are listed beside the Word List. Use no word more than once.

2. PRIZES. The highest scoring contestants, in accordance with the official rules, will win the prizes, which will be awarded in order of relative scoring rank.

3. WHO MAY NOT ENTER. This contest is closed to employees, agents, relatives and others connected with this contest, including anyone who has won over $500 in a single puzzle contest before entering this contest.

4. TIES. Ties are to be expected, in which event, tied-for prizes will be reserved until ties are broken. Each tied contestants will compete in as many additional free puzzles as required to break ties, but not to exceed nine more, after which if ties still exist, duplicate prizes will be awarded. Tiebreakers will be more difficult and values may also be given for combinations of letters, and the puzzles may be made up of more than one frame each. Tie-breaker puzzles will be required to be solved and judged only if ties still exist after judging of preceding puzzles. No payments or purchases of any kind will be required with tiebreaking submissions to compete for the $1,500 1st Prize and the other basic prizes listed in the headline, including the Bonus Prize At least 2 days will be allowed for the solution of each mailed tiebreaker. If necessary, tied contestants may be required to do one or more tie-breaking puzzles under supervision and without assistance in a 2-4 hour period per tiebreaker. The right is reserved to make such further rules as deemed necessary for proper functioning of contest and to assure fair and equal opportunity to all contestants, and all contestants agree to be bound by same.

5. DATES. Entries must be postmarked not later than July 4, 1950. Everyone in the family may enter—but only one entry per person. Each entry must be accompanied by a stamped, self-addressed envelope. Original and tie-breaker solutions NOT accompanied by a stamped, self-addressed envelope may be disqualified! You may draw by hand a copy of the Free Entry Coupon and use it to enter. The right is reserved to offer increased, additional or duplicate prizes. Contest subject to applicable State and Federal regulations. No submissions will be returned and no responsibility is assumed for lost or delayed mail or delivery thereof. Judges' decisions final. Prize money on deposit in bank. Full list of winners available to all contestants as soon as final judging is completed. HIGH SCORE FOR THIS PUZZLE WILL BE MAILED TO EACH ENTRANT WITHIN 14 DAYS OF DATE ENTRY IS RECEIVED.

SAMPLE SOLUTION

Here is a Sample Puzzle which shows you how to get a score of 70. This is not a very good solution as it is easily possible to get a higher score. Now try the Official Puzzle at left.

B 10	A 10	T 10	10
I 3	C 5	E 10	10
S 2	E 10	A 10	10
			3
			5
			10
			7
			10
			10
			TOTAL SCORE 70

BONUS PRIZE! GET SOMEONE ELSE TO ENTER THIS CONTEST AND YOU WILL RECEIVE A BONUS PRIZE OF AN EXTRA $100 CASH IF YOU WIN FIRST PRIZE! To prove you were responsible for your friend or relative entering, have him print your name on the back of his or her Free Entry Coupon. Send in your Free Entry Coupon NOW — have him send in his Free Entry Coupon in a separate letter including his own stamped, self-addressed envelope.

YOU ENTER ON ONE COUPON—LET A FRIEND OR RELATIVE ENTER ON THE OTHER

FREE ENTRY COUPON
(PRINT NAME CLEARLY)

1. My Name _____
2. My Address _____
City _____ Zone ____ State _____
3. ☐ I enclose a stamped, self-addressed envelope.

MY TOTAL SCORE

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(PRINT NAME CLEARLY)

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2. My Address _____
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3. ☐ I enclose a stamped, self-addressed envelope.

MY TOTAL SCORE

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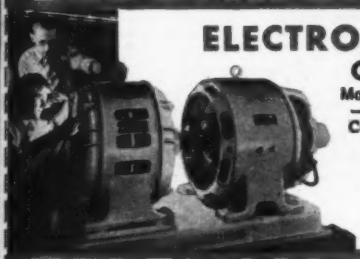

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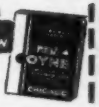

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Invention Clinic

[*Continued from page* 20]

get information on building a barrel polisher.

These things are listed as "Barrels—Tumbling" in manufacturers' directories, and consist essentially of a barrel which tumbles the parts and knocks them against each other. Sometimes abrasives or other materials are introduced during the tumbling operation. There are nearly 60 manufacturers in the U. S. who produce them. I have not seen any construction designs but maybe some of our readers can provide the details you seek.

Ratchet Wrench

Robert S. Brown, Rogue River, Ore., sends diagrams and descriptions of a ratchet wrench head which would allow an advance of a little more than half a degree per click. Does he have anything patentable here? How should he proceed?

Seemingly you have given this considerable thought, but you may run into a manufacturing problem of which you are not fully aware. I would suggest that you construct a workable model to get rid of possible bugs, then have a search made on the design and improvements which I feel sure will result from working on your model. If your model will cost you more than $25, reverse the procedure and have the search made first. In either case you should know that it is not easy to sell any new style of ratchet socket wrench. •

Dear Editor

[*Continued from page* 14]

• *Correction*

The cherry shaker pictured in your January issue was credited to the United States Department of Agriculture and Michigan State University. Please be advised that this piece of equipment has been developed, manufactured and loaned to the United States Department of Agriculture and Michigan State University for experimentation by the manufacturers, Gould Bros. Inc., 12570 North Capitol Avenue, San Jose 27, California.

George R. Hutchinson
San Jose, Calif.

• *Cooking Gas Buggies*

The article Run Your Car On Cooking Gas (Feb. MI) really got me. I have a '58 Chevy that I converted myself. It took me the better part of eight hours to do that job. I had all the tools and a shop to work in. I would sure like to shake hands with the man that

[*Continued on page* 27]

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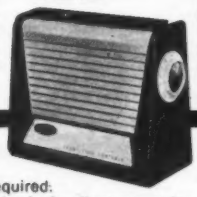

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Dear Editor

[*Continued from page* 25]

can make the conversion in two-and-one-half hours. He sure must be very fast. I have a 31-gallon tank and a Beam conversion kit. It does save a lot on fuel, oil and repairs. The oil in my car has 7,000 miles on it with only one quart added. My car runs very smoothly except that I get a very slight fuel pump knock when the gasoline is shut off.

John Roberts
Willits, Calif.

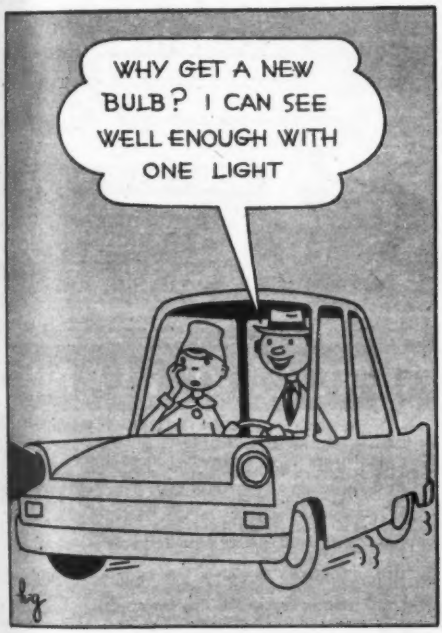
My husband had an LP tank installed in our '56 Chevy. It performed beautifully but we found that in nearly all the states that we passed through a permit to buy the stuff was required.

Mrs. Charles L. Dohs
Concord, Calif.

• *Answer To Admiral's Puzzle*

120. If you got something else, go rebuild your equation.

DON'T DO-ITS



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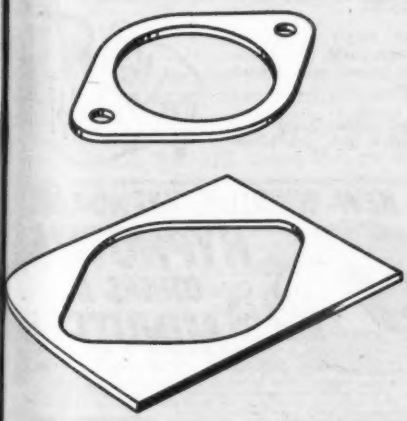

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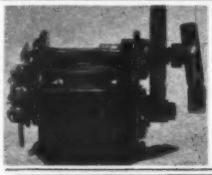

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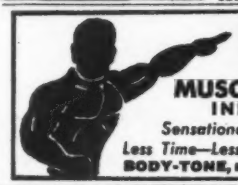

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PATENTS GRANTED

SILENT sufferers who sleep near habitual snorers will like the snore-stopping diaphragm mouthpiece devised by William A. Nunn, Jr., of La Mesa, Calif. Mr. Nunn got patent 2,867,212 for the silencer which is inserted between the teeth and lips.

Cowpokes in short pants can settle once and for all who is the fastest draw with a toy pistol containing a built-in timing device, invented by Frank S. Tornabene of Douglaston, N. Y. A calibrated scale on the pistol indicates the time of the draw. The inventor won patent 2,869,873.

A buzzer that sounds when an auto fuel tank gauge nears the empty mark took patent 2,867,698 for its New York City inventor, Charles Gondolfo.

Your hi-fi records dusty? Herbert J. Ravis of New York City won patent 2,866,541 for a thin cardboard jacket with a sliding drawer that, when closed, keeps discs dust-free. The inventor assigned patent rights to Peerless Album Co., Brooklyn, N. Y.

An iron—either steam or dry—that floats on a cushion of air took patent 2,864,185 for John E. Vance, Canton, Ohio. The iron is fed compressed air. The soleplate is designed so that this air stream causes the iron to float above the garment being pressed, reducing "pushing effort" about 75 per cent. The Hoover Co., North Canton, was assigned patent rights.

A lazy man's toaster—slip the bread into it and exert a slight downward pressure to start the toasting—automatically lowers the bread into the toaster and pops it out when done. Alfred J. Huck, St. Louis, Mo., awarded rights to Knapp-Monarch Co., in St. Louis. The toaster got patent 2,863,377.

A pick-proof pocket invented by Charles D. Ellison of Glen Burnie, Md., has a closing flap which makes it virtually impossible to pick without attracting attention. A partition within the pocket divides it into two sections, one of which becomes a hidden pocket. Mr. Ellison received patent 2,859,449.

Easier on the eyes is the fluorescent lamp designed to absorb eye-fatiguing ultra-violet rays. It was dreamed up by Laurence Burns, Swampscott, Mass., and was given patent 2,864,966. Sylvania Electric Products, Inc., of Salem was assigned patent rights. •

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An area about 60 miles northwest of Anchorage, Alaska, has been reported to contain several coal beds.

One-third of all the world's city dwellers and 53 per cent of the world's population now lives in Asia.

A tape recorded newspaper has been made available to the blind in Norway.

Ball-joint suspension and steering linkage can be made so smooth and slippery that a test car has gone 80,000 miles without grease.

A system has been developed in Britain for reducing heavy waves and creating areas of calmed water at the entrance to harbors.

In 1900 the U. S. used 40 billion gallons of water per day; now 270 billion gallons are used daily.

Batteries have been developed for extremely cold climates which are kept active by the body heat of the user.

Sixteen thousand people work in the 1,472-ft. tall Empire State Building in New York City.

A 150-lb. woman, walking on extremely narrow high heels, will exert momentarily a pressure equivalent to more than 2,500 lbs. per square inch.

A Japanese atomic clock, using ammonia gas, has almost perfect accuracy, with an error factor of one second in 50 years.

The U. S. Air Force plans to test parachutes at speeds of more than 3,000 mph and at altitudes of 26 miles above the earth.

Scientists are investigating the possibility that vibration may cause truck drivers to go to sleep at the wheel and airplane pilots to become drowsy in flight.

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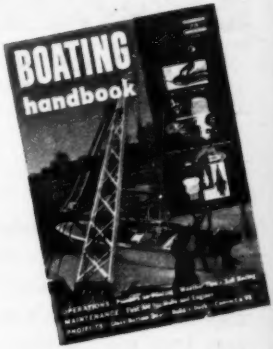

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AT YOUR LOCAL NEWSSTAND, LEADING DRUG STORE, SUPER MARKET, HARDWARE STORE AND BUILDING SUPPLY DEALER

PACE-SETTING DESIGN . . .

THE LARK BY STUDEBAKER

The Lark combines a number of unusual qualities in a manner that is a tribute to engineering. Its 108 inch wheelbase is long in relation to its 175 inch overall length. There is virtually no overhang, front or rear, so that handling and cornering is of continental calibre while interior space (seats six) is typically U.S.A. Ride is comfortably firm, but not hard, due to an interesting suspension system. Variable rate coil springs surround hydraulic shocks up front, while asymmetrically mounted semi-elliptics combine with outward angled hydraulic shocks at the rear, boost cornering ability, cut "squat" when accelerating and provide all around stability. The economical 170 cu. in. "6" utilizes an entirely new combustion chamber shape for amazingly smooth combustion on low grade fuel. The V-8 is available with 4-barrel carburetor and dual exhausts. With this combination, performance is *exceptionally good*. The car really digs in and goes. Many options are available. And if you enjoy tinkering with your own engine, The Lark's a pleasure. Peek under the hood and look at the labor-saving working space. In fact, drop in at your Studebaker Dealer's and enjoy a demonstration drive.

The Lark is available as a 2-door and 4-door sedan, hardtop and station wagon.

Mail for McCahill

Uncle Tom is sorry he can't answer all his mail personally. In this column he'll answer the most interesting letters. Write to him at MECHANIX ILLUSTRATED, 67 West 44th St., New York 36, N. Y.

● *My complaint is about the trunks on modern cars. You can jam a lot into one but the car gets lower and lower. On a recent hunting trip we had about 200 pounds of luggage in the trunk of a 1958 chariot. As we traveled at night the Low headlights were so high that we had every oncoming car blinking its lights to us to dim when we already had ours dim.*

A. B. Prestridge
Norfolk, Va.

On some cars now being built with rear air suspension only, backing-up steel springs have licked this light-beams-in-the-sky fault. However, a product known as "Air-Lifts" which are inflatable rubber bladders that fit inside coil springs will accomplish the same thing. Some time ago we suggested headlights that could be adjusted from the instrument panel to compensate for such conditions.

● *Can you still stop a car by spinning it so that it ends up facing the direction from which it came, or have you decided you want to live to be an old man?*

I. Sheldon Fishman
Hewlett, N. Y.

Both.

● *I need some help. I have an especially stubborn father-in-law who swears he once owned a straight-eight Lincoln. After much discussion, in which neither of us made any impression, I have finally decided to bother you and try to get something in writing he might read.*

I have been around automobiles all my life —my father was one of the first Reo dealers in Colorado—and have owned several Lincolns, none of which was a straight-eight. I have looked for some proof to show my father-in-law but have had no luck. I even called the Lincoln-Mercury plant here in L. A. Their word wasn't good enough for him. So you see you are stuck.

Karl V. Scharf
Inglewood, Calif.

Henry M. Leland, former president of Cadillac, brought out the first Lincoln car in 1921. It was a V8. In 1932 they introduced a V12, so it is safe to say that all Lincolns since the beginning were V-type engines.

● *What do you think of the great new features on the '59 cars? I am referring to engines that run on regular gas, six-cylinder engines, cars that have cut the wraparound off the windshield so you can get in and out without banging your knees, etc.*

I would like to suggest some new features for the '60s. There could be new, economical long-wearing 15-inch tires; new, high six-inch road clearance; new, thrifty single-barrel carburetors; new, dependable manual chokes; and new gauges that actually read engine temperature, oil pressure and battery current.

Ralph E. Davison, Jr.
Hawthorne, Calif.

Your ideas are great but I'm afraid they're too advanced for this backward Missile Age.

● *I've gotten the impression that you don't like the new quad headlamps. Must you always fight advancements?*

Mrs. T. S. Roach
Kansas City, Kan.

We always try to help advancements—but as yet I've not found a set of four headlights as good as two good ones, and I've driven thousands of miles at night in just about all the four-eyed monsters made. With the quads it's been my experience that the low beam of two lights is much too low for any speeds above 25 mph. When they're all on, the shotgun tactic blasts into farmhouse rooms, penetrates oncoming drivers and does just about everything but light up the road. If this is "advancement," give me an old-fashioned Magic Lantern and a hot candle.

There's never been a headlight made in this country that compares with some of the good

imports. The Marchal lights of 25 or 30 years ago were the greatest ever designed. A good headlight should have the following properties: The dims should light up the road adequately for at least 100 yards or more without throwing any stray light on the oncoming lane, and the brights should drill straight down the road like a rifle, lighting up all areas, especially the center of the road where obstructions might be found.

Some of the old Marchal lights had many more controls including an extra high-high beam for speed cruising at night that would produce almost the equivalent of daylight for about a mile. Incidentally, let's also mention the back-up light situation. Some of you may recall the J Duesenberg's back-up light that had nearly the power of a headlight and enabled you to see if you were backing into a river. Most of today's crop are so inadequate that you could back right into a tree before you saw it. "Advancements"—my foot!

● *I know that you influence a lot of buyers, as you've influenced me on my last two cars (which have borne out your reports). Once, when my wife and I disregarded your tests and bought another car in spite of your report, we thoroughly regretted it as it had all the bad points you mentioned plus some additional ones. What's bothering me is that sometimes when you report a car as being pretty close to bad, thousands and thousands of people buy them and seem happy with them. How come? Does this mean that your tests and reports on their faults weren't really important after all—or what?*

Jack Stoddard
Washington, D. C.

The bare truth, Jack, is that better than 90 per cent of American car buyers wouldn't know a good car if they drove one. By the same token, they don't know a bad car when they own one; they just figure all cars are like that. Readers of a magazine such as MI, by the very fact of their purchasing it, are a lot sharper mechanically than the clod who can be told to "Buy the cereal in the big red box—it's tastier!" I feel it's safe to say that more than 50 per cent of our drivers have never driven a really good automobile, so they have no yardstick to go by. How can you sell a guy on the importance of good suspension when he's never driven a car that had worked its way up to being just lousy?

● *I've already put on over 7,000 miles on my new 1959 car, which doesn't boast a temperature gauge but has a light that's sup-*

[*Continued on page* 48]

Stop at the sign of the Smiling Tire

Ouch! This 6″ stob tests tire strength. Bruising impact—but no tire failure! Assures greater safety when you drive over curbs, chuck-holes, railroad tracks.

Relax! Drive worry-free on B.F.Goodrich Silvertowns. They are lab-tested, road-tested, time-tested. We do the worrying for you! So have fun. Enjoy trouble-free mileage on the quality tires chosen for new cars year after year. Get top value, get Smileage! 4 tires, $4 down!

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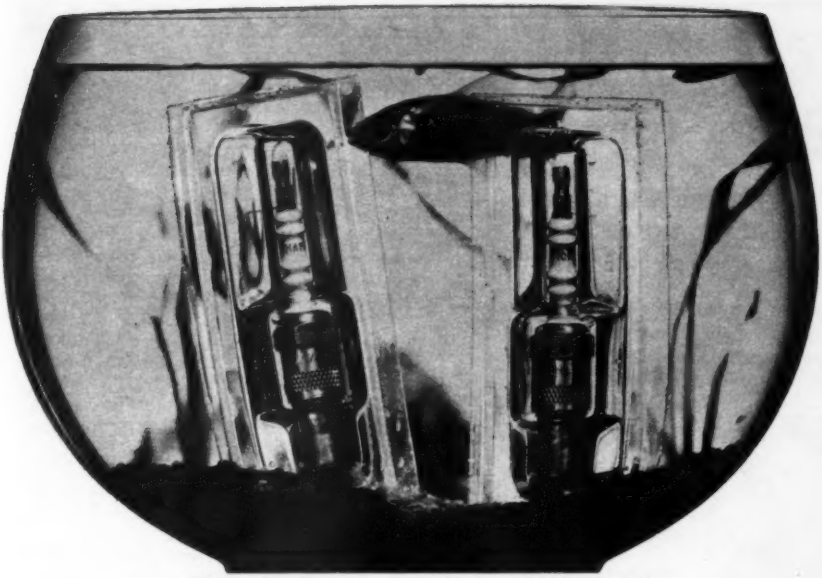
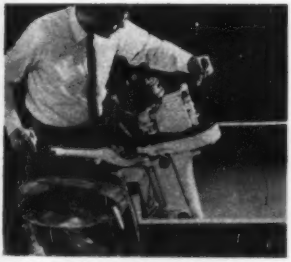
B.F.Goodrich ***Smileage dealers***



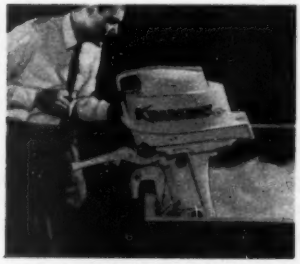
24 hours before these pictures were taken, we put these Champion plated marine spark plugs in this goldfish bowl. Plenty of time for water to try to seep into these waterproof packs—*if it can!*

Waterproof pack makes Champion spark plugs the perfect spares...

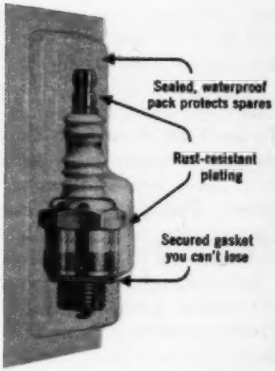
24 hours under water—and these new Champions spark motor to life on first try!



After 24 hours under water, Champions are opened, gapped and put into engine, without being dried in any way. Even a little moisture could short the plugs... keep engine from starting.



It starts on the first try! Here's proof that plated marine Champion spark plugs in the *waterproof* pack are always ready for instant use when carried as spares.



Only Champion offers you a waterproof pack to help assure your boating fun by keeping your spares always clean, dry and ready for instant use!

CHAMPION

START THE SEASON WITH A NEW SET OF CHAMPION MARINE SPARK PLUGS

Can We Make Money Together?

Do you have what it takes to start your own automotive wholesale business?

I want a practical, hard-headed man with the guts to succeed in his own business. Someone who doesn't kid himself about how easy it would be if he were the boss. This opportunity is only for a man who will work hard, devote his full time and be able to make an investment of about $7,500 in a truck and stock.

CHARLES E. BOWES
President

Still with me? Then here's the story! If you are the man I'm looking for, you will have a chance to become a franchised distributor, for the Bowes "Seal Fast" Corporation. In this business of your own, you'll meet the needs of service station operators for automotive parts and accessories—products they must have to stay open. You'll make money. Good money. And there's no ceiling on your earnings. We'll make money too. So we're careful to pick the right man and give him all the training and help he needs toward building a solid, depression-proof business.

Is this what you're looking for? Then write today for our free booklet "So You Want To Be Your Own Boss!" It has all the facts about this opportunity and there's no obligation. Send your request to: Mr. Charles E. Bowes, President, The Bowes "Seal Fast" Corporation, 5902 E. 34th Street, Dept. 405, Indianapolis 18, Indiana.

Bowes Distributors throughout the country are part of a multi-million dollar operation. They represent a firm which in 40 years has grown to be one of the largest of its kind, with plants in London, England; Hamilton, Ontario; Riverside, California, and Indianapolis. Its credit rating is the highest (AAA-1) available.

Mail For McCahill

[Continued from page 46]

posed to come on green when it's Cold and red when it's running Hot. After a brief warm-up this light always shows Hot—and has ever since the car was new. The service manager says that it's a faulty gauge and that the car is not running Hot but he hasn't received the replacement as yet. Regardless, it makes me very uncomfortable during my daily business trips to see that light reading Hot all the time. Any suggestions?

Phil Ridgely
Fresno, Calif.

Break the bulb and forget about it. These cheap gauges are no damn good anyhow. Which brings up a point—the degeneration of car instruments in the past five years shows real automobile men what the manufacturers think of their buyers. This Hot, Cold, Gen and Oil stuff was designed strictly for morons. And they still wonder why the imports are selling so well!

● *Has it ever occurred to you that when you were the country's first and only auto tester and were criticizing Detroit's products, you might have stood an excellent chance of getting bumped off? Before imitators started making tests like yours, you could have been stamped out like the first fire ant—which I believe would have made a number of people in Detroit very happy.*

R. C. F.
Pontiac, Mich.

We've thought about it. Oddly enough, many years later, I learned over a few extra highballs from a Detroit inmate that others had thought about it, too. In fact, I was told that a number of methods of elimination were discussed in the early days but nobody wanted the responsibility of tossing the first brick—just in case it missed.

● *An old item you wrote some years ago saved my hide recently. I'd bought a load of gas at a small filling station and was driving cross-country late at night in sub-zero temperature. The engine sputtered and stopped. When I lifted the hood I saw the gas filter was nearly full of water. I cleaned it out and after two or three minutes it stopped again. The filter was full of water again. That gas fill must have had a gallon of water in it! I was at least ten miles from the nearest town and it was late at night. It was then I remembered your tip. I had a full gallon of anti-freeze in the trunk. I punctured the can and poured the whole gallon in the gas tank. After one more stop for a filter clean-out, the car started*

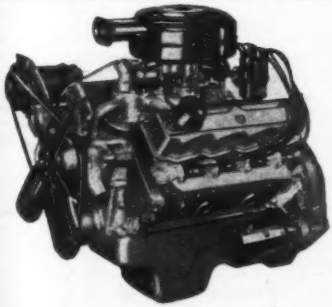
[Continued on page 50]

ONLY THE '59 PLYMOUTH GIVES YOU SPORTS CAR HANDLING, PROVED ECONOMY—AND PERFORMANCE, TOO!

You don't have to take our word for it! The experts — impartial automotive writers and editors —agree that in the low-price field, there's no car that *handles* like the '59 Plymouth! As MOTOR LIFE puts it: "... Great handling car. ... May even surpass some sports cars."

Don't take our word for Plymouth's *economy*, either. It has been thoroughly documented in tough competitions. Today's standard Plymouth V-8s save extra gas with new Fuel-Saver Choke plus new 3-stage Carburetor.

As for Plymouth's *ride*, it's Torsion-Aire, yours at no extra cost. There's nothing to compare with it in the low-price field ... for smoothness, for minimum of sway or roll, for level-keel cornering, for freedom from dive on stops. And Plymouth's extra roominess inside assures you of the sort of *comfort* you've never before associated with low-price cars! Why don't you ask your Plymouth dealer for the Two-Mile Try-Out that will prove to you what a big difference Plymouth's great engineering makes!



ECONOMICAL FURY V-800 DEVELOPS 230 HP

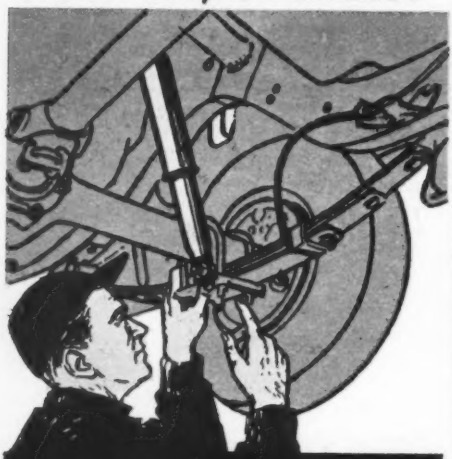
Biggest standard V-8 in the low-price field. A *repeat winner* in its class in the Mobilgas Economy Run, only recognized competitive test for economy in America today. 318-cubic-inch displacement. Also available at small cost: 305-hp New Golden Commando 395, biggest V-8 in the field.

'59 Plymouth

to be fully appreciated must be driven

For smoother riding and safer driving . . .

REPLACE WORN SHOCKS EVERY 20,000 MILES!



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double-action shock absorbers

- Your best bet!
- Your best buy!

Sold at all leading chain stores

Save money— install 'em yourself!

Insist on Hercules . . . anything less is second best

HERCULES SHOCK ABSORBER CO.
Cleveland 15, Ohio

Mail For McCahill

[*Continued from page* 48]

to run pretty well and didn't stop again. When I reached home it was running normally. That alcohol did what you said and picked up the water or something. Anyway it worked, so thanks to you from me.

Harry B.
Helena, Mont.

I took my own advice recently on the Waterways. I had a new auxiliary fuel tank installed on my boat, *The Rooster,* and was bringing it south in 20° temperature when, in the middle of Albemarle Sound, the engines started to cut out. In fact, one died completely. As this was a 50-gallon tank, nearly full, it called for a lot more alcohol than you'd normally use in an automobile. Fortunately, I had two gallons of auxiliary stove alky aboard and poured both gallons into the tank. After one filter cleaning and a few misses, both engines ran perfectly the rest of the way to Florida.

What the alcohol does is actually mix with the water in the tank and condense it so that it'll go through the fuel lines without blocking, through the carburetor and into the combustion chamber where it burns off unnoticed. Don't overdo this alcohol bit, because you can burn up valves this way, but an occasional use won't do a bit of harm. In fact, a quart of alky in the gas tank a couple of times a year is a good trick as it cuts away fuel line gum and will clean out any moisture. If you want to prove how alcohol volume mixes with water, pour a pint of water into a quart bottle, then add a pint of alcohol. Theoretically you should have a full quart of liquid—but you won't, by a long shot. The alky shrinks right into the water.

● *Because of your recommendation I bought a new 1958 Volkswagen, much to my sorrow. The noise from the fan is terrific. One must keep an eye on the speedometer constantly in city driving because it is not good to shift into third gear unless the car is moving at 23 mph. In our town the speed limit is 25 mph so the result is that all my city driving has to be in second gear.*

It is not good to drive less than 11 mph in second gear (when caught in traffic) but as it is quite impossible to shift back into first from second while the car is moving, it is necessary to stop the car completely to shift back into first. Shifting into reverse is a clumsy and very difficult operation for women.

W. F.
LaCrosse, Wis.

How do you spell "square?" Anyone who

[*Continued on page* 52]

See better in spite of the other car's lights!

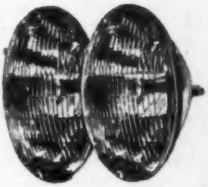
Get NEW G-E SUBURBAN Headlamps with the "built-in spotlight" effect in the low beam

... especially designed for all cars with two headlamps

Only the new General Electric SUBURBAN Headlamps have the low beam filament *optically centered* in the reflector. Because this filament is on focus, it provides *twice* as much light in the "spotlight" area—with ample light to the sides of the road—and with no added drain on the battery.

The additional light enables you to see better beyond the oncoming car in spite of *its* lights—when both cars are from 75 to 200 feet apart. And it helps you recover your vision more quickly after the other car goes by.

See the dramatic difference; get G-E SUBURBAN Headlamps. Have a pair installed and aimed now. General Electric Co., Miniature Lamp Dept., Nela Park, Cleveland 12, Ohio.



Special low beam filament shield lets you see better in fog, rain or snow. The upper beam reaches far and wide for safer driving on the open road.

Get a pair today

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Mail For McCahill

[Continued from page 50]

has to bring a VW to a full stop to get it into first just never learned to drive.

● *Took your advice about a Volkswagen three years ago. Excellent car.*

James A. Wilson
Castro Valley, Calif.

I believe it was Old Abe who said, "You can't please all of them . . . so to hell with most of them. . ."

● *I hesitate to write this—and please don't print my name—but a friend of mine who won in his class at the Daytona Beach Speed Trials two years ago told me his "secret"—which I don't believe. He says that he learned from a German chemist that if you pulverize chicken feathers into a fine dust and add about a cup of this to your fuel, it'll increase the power anywhere from 20 to 30 per cent. I don't believe this but thought I'd better check with you for your opinion.*

J. K. H.
Norwalk, Conn.

If he meant 20 to 30 per cent more horsepower than a chicken, he's probably right.

● *Why is it that you don't have more memorable slogans in your articles each month—such as the National Safety Council's "The Life You Save May Be Your Own." I think you could do some real good with some slogans.*

Mrs. Loretta King
Buffalo, N. Y.

How's this for a starter—"Help Stamp Out Bird Sanctuaries?"

● *Here's a question I've never heard you answer: Why did you grow a mustache?*

Herb Doyle

I started it at the age of nine with the hope that it would make me look manly.

● *I am engaged to marry a fan of yours whose hobby is stuffing birds. Should this worry me?*

Mildred S.
Omaha, Neb.

Not unless his hobby suddenly expands and he starts eyeing you oddly.

● *Here's the lousiest practical joke anyone ever played. During our recent sub-zero weather (just before my wedding), some so-called "pals" of mine almost ruined my entire wedding trip. After the ceremony, when I*

[Continued on page 54]

What kind of a car do you want, exactly? Chevrolet has a choice of nine engines, five transmissions, two suspension systems, regular or Positraction rear axles, special cams, two air-conditioning systems, even Fuel Injection—the list of extra-cost options is tremendous. But what it means is that you can virtually design your own car, tailored precisely to your needs. Here's just one example:

"I 'built' my Chevy for top economy... and extra easy running at 300 miles a day."

"As a traveling salesman with a big Midwest territory I rack off about 300 miles a day—and, boy, how I love gas economy. But I like all the comfort I can get, too.

"I used to wish I could design my own car, until this year. That's when my on-the-ball dealer friend showed me how I could 'build' just the right car out of Chevy's terrific list of options. Look what I got:

"I picked a Biscayne two-door, 'cause I pay for my own auto and that's right at the base of the price list. A Hi-Thrift 6 engine—that's the world's best workhorse. And Overdrive; with that high ratio you can just whisper down the road at good fast cruising speeds. No strain, hour after hour . . . and that gas needle *never* seems to go down!

"Then I pampered myself a little bit. Foam rubber padding in the seats (I'm a big guy and I spend *hours* at the wheel); Chevy's new throttle-holder where you just set your cruising speed for those long straights and the car holds it while you rest your right foot; the big 'fresh-air' heater. Man, you should drive my car. It fits me like a glove!"

There's something to figure on, friends. Whatever kind of car you want—sports car, salesman's car, town car—you can "design" it for yourself. But check your Chevrolet dealer and see how you can suit yourself to a T. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

CHEVROLET

[Continued from page 52]

opened the trunk of my Dodge to put our bags in for our honeymoon trip to Florida, the entire trunk was filled with one solid cake of ice. I had noticed that the rear end was way down; it was so heavy that the least ripple in the road would cause the tires to rub against the body. We carried our baggage on the back seat but after a few miles pulled into a garage where it took a long time to hack out many heavy chunks with an ax. We didn't get it all out, by a long shot, and we still had ice in the trunk when we crossed the Florida border. This might have been funny but it did a lot of damage to the body seams from expansion. Now the trunk lid doesn't even start to fit. Recently another pal told me how they did it. They took a garden hose in five below zero temperature and played it in the trunk until it froze to a point where the trunk wouldn't leak. Then they kept filling it right up to the brim. It must have weighed over 1,000 pounds. Some joke, eh? And some pals!

W. T. Q.
Minneapolis, Minn.

If they weren't pals, they'd have filled the whole car with ice and your honeymoon would have been delayed until next summer. Mean trick, no doubt, but you must admit it was ingenious.

● *Recently I've seen lots of cars going down the turnpike with their trunk lids open and, in most cases, I doubt that the drivers were aware of it. Why don't the manufacturers invent a light that'll warn the driver when the trunk lid is open?*

Paul Dudley
Newark, N. J.

Maybe they figured they had it pretty well licked with the rear-view mirror.

● *The other night while driving home from L. A. I got my car up to just over 115 mph when I heard a horrible scream. When I slowed down it stopped and I haven't heard it again.*

Jack Heath
Phoenix, Ariz.

Those were the Pearly Gates, swinging wide, in need of a lube job.

—Tom McCahill

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Swing into the saddle, ease open the throttle, and learn a new definition of fun. New body styling and mechanical advances (such as the tapered roller bearings now on both wheels) make Cushman Scooters more distinctive than ever. Famous Cushman Husky 4-cycle engine delivers up to 50 miles per hour, up to 100 miles per gallon.

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DU PONT

PAINT NEWS

NEW DU PONT LUCITE ACRYLIC HOUSE PAINT

TRADEMARK

LASTS 50% LONGER

DRIES IN 30 MINUTES

Here's the greatest paint discovery since Du Pont quick-drying auto finishes: Du Pont "Lucite" Acrylic House Paint. It's so durable it lasts 50% longer than ordinary paints! No other paint even comes near equaling it. An acrylic emulsion, it is recommended for use only over No. 38 Blister Resistant Wood Primer on new wood or on old surfaces from which the finish has been completely removed.

Exposure panels and test houses indicate that the same advantage of longer life can be expected when "Lucite" House Paint is applied over firmly adhering old finishes that are in good condition for repainting. But, further experience is needed before such use can be made a recommendation.

SOLVES BLISTERING PROBLEM

For a long time blistering has been home owners' most serious paint problem. Until now, it has been an almost insolvable, recurring predicament. The combination of No. 38 Primer and "Lucite" Acrylic House Paint can give unprecedented protection against blistering because it is chemically engineered to allow moisture vapor to breathe through while shutting out water penetration from the outside.

EASIEST PAINT TO APPLY

"Lucite" Acrylic House Paint flows on more smoothly and evenly than any paint you ever used. It dries in 30 minutes and it's ready for a second coat in one hour! Thus you can save a lot of time and money by avoiding a great deal of ladder shifting that is usually necessary. One coat covers, two give maximum protection and durability. Water is all you need for thinning. And it's so easy to clean up . . . fresh paint spots wipe off with a damp cloth. Soap and water clean your brushes. This amazing new paint and primer are now ready for immediate delivery at your Du Pont Paint Dealer's. You'll find his name in the Yellow Pages of your phone book.

Buy the Paint That's Worth the Work, the Beauty Lasts

DU PONT

Better Things for Better Living
. . . through Chemistry

EUROPE...OR THE FAR EAST

choose your travel before you enlist

Ever had the itch to travel? To explore Paris at dawn? To hunt wild boar in the forests of Japan? To try surfboarding at Waikiki? Skiing in the Swiss Alps? Swimming on the Italian Riviera?

Every year, thousands of American soldiers experience the thrill of foreign adventure. Roaming far-away corners of the world that most folks at home can never hope to see. Storing up exciting memories that'll last a lifetime.

Many of these Army men *chose* their own travel. And they made their choice *before* enlistment.

Sound interesting? Your Army recruiter can tell you all about Army travel opportunities. This week, drop in and talk it over.

P.S. You may enlist in the Army for only three years.

CHOICE, NOT CHANCE **U.S. ARMY**

Mechanix Illustrated

1959

TWO-WAY RADIO FOR EVERYONE

By Robert Hertzberg

THE age of personal two-way radios is with us. Dick Tracy will soon need a new gimmick. In a very little while you will be using your set to solve countless communications problems—calling your wife from the garage to ask if your long-nose pliers are in her kitchen catch-all drawer, for instance. The new Citizen's Band, and the new privilege of becoming a licensed ham by simply filling out a form and mailing it in, will mean that radio will be a medium for the endless, trivial, disorganized and yet ultimately useful jabber of the human race.

You're up on the roof, adjusting the TV antenna. From the living room your wife, without straining her voice or your temper, gives you helpful guidance as she watches the screen. Or you're out on the lake, and across a mile of water you see a friend in his boat; you can

FARM TALK over the RCA Radio-Phone makes country living much easier.

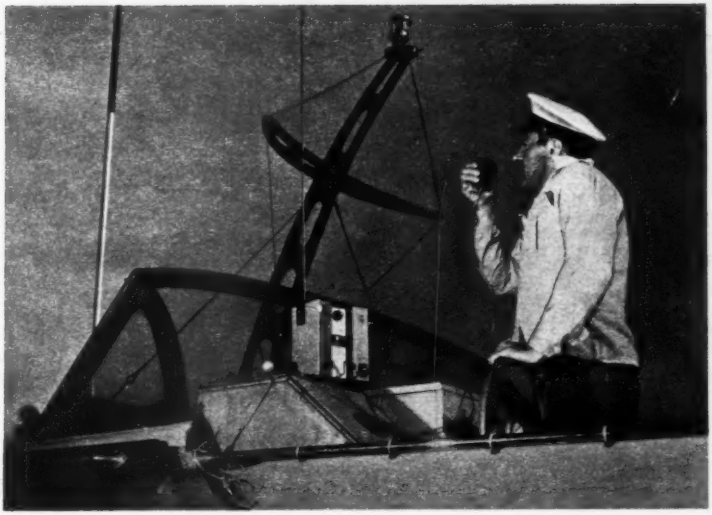
talk to him immediately. Or, waiting out at the main road to be picked up by your car pool, you remember an important PTA message you forgot to give your wife last night. You happen to have your set with you because you have found it useful for contacting your office while touring the plant. As the car pool appears over the hill you call your wife and, the message delivered, start the day with a clear conscience.

KAAR IMP sells for $360, runs on six or 12-volt batteries or house current. Range is up to seven miles.

Wherever you are — upstairs with a sprained ankle, out on the back forty on the tractor, or reading the funnies on the lawn, your wife can consult you about lunch, shopping, where you put the car keys—any of the little household queries that usually mean extra steps, hallooings and some aggravation.

Those are some of the fascinating possibilities the FCC opened up when it recently assigned an entirely new band of operating channels to the ten-year-old Citizens Radio Service. Designated as Class D, the new facility permits simpler, lighter, more compact, more reliable and easier to use equipment. An FCC license is still required for each "station" but this is merely a paper formality and is yours for the asking, without examination.

Unlike the amateur service, which is limited strictly



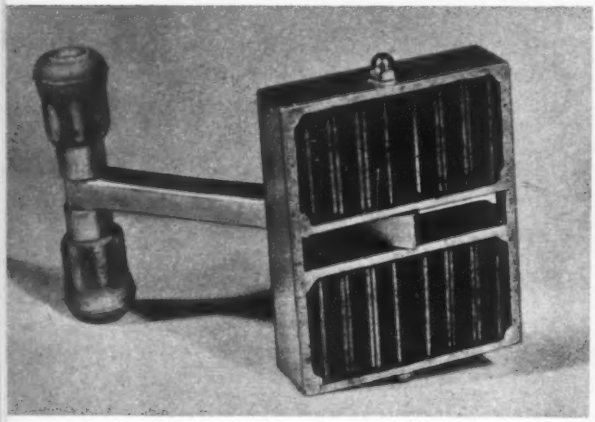
BOAT OWNERS will of course be enthusiastic users of the new D band.

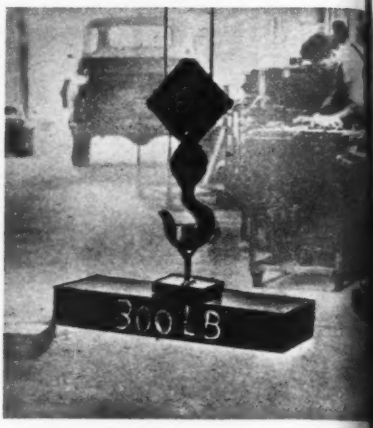
to experimentation and to conversation between licensed technical operators, Class D is wide open to *any* kind of personal or business communication. It is available not only to individual citizens (age 18 or older) but also to clubs, companies, corporations, partnerships and other organizations, providing only that they are not owned by aliens or controlled by representatives of foreign governments.

The one big catch in the Citizens Radio Service is that its 22 channels are shared by all purchasers of equipment. In effect, Class D is a nationwide party line. This isn't quite as wild as it sounds because the power limitation for all transmitters is five watts. This is low but it's enough to permit reliable point-to-point talking up to about two miles between a car and a home or office station (perhaps [*Continued on page* 160]

ON THE MARKET—left to right. Springfield Enterprises kit costs $18.95 for chassis, more for parts; RCA and Gonset, both around $125; Intl. Crystal, $95-$150 (approx.); Morrow Radio, price to be announced. The two-way radio shown on this month's cover is a Kaar TR500.

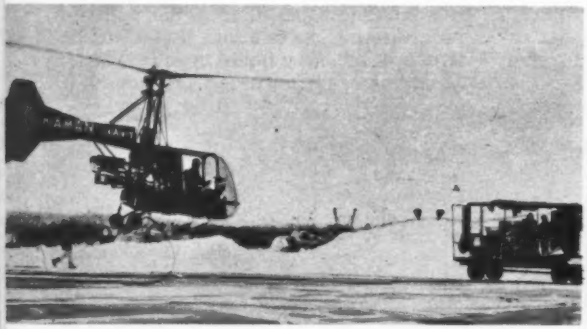
LITTLE HANDLE--BIG LIFT

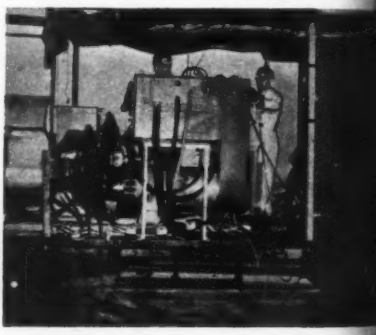




POWERFULLY attractive is the Bear Paw magnetic handle. It weighs only five lbs. and measures only 5¼x5½ inches, yet it can lift over 300 lbs. The Bear Paw is made of permanent Indox magnets imbedded in plastic and gets its strong attractive force from a magnetic field that extends only $\frac{1}{16}$ of an inch. It is designed for lifting or sliding flat metal sheets and similar chores. Smith's Metal Sales Co., Whittier, Calif., makes the small, $40 powerhouse. •

FIRST ELECTRIC HELICOPTER



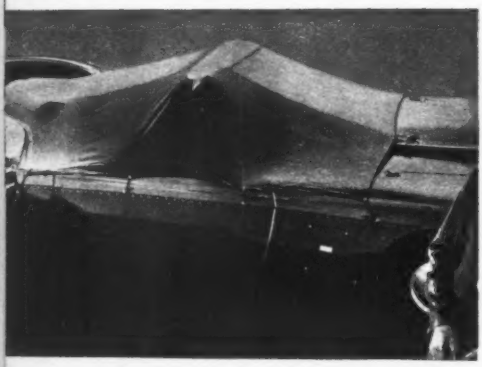


ELECTRICITY powers, via cable, the robot helicopter designed and built by the Kaman Aircraft Corp. The craft used was a Kaman HTK-1 two-place trainer. Its 240-hp engine was replaced by a Task Corp. electric motor of equivalent horsepower. First flights were undertaken at low altitudes. An oil and air-cooled induction motor drives the main helicopter transmission through an auxiliary spur gear box. Ground electrical equipment consists of a 250 KW AC generator driven by a Solar gas turbine and a high voltage step-up transformer which is utilized to project the 400-cycle power at 2,200 volts. Quite a charge, eh? •

MIMI is sun-broiling hamburgers on her Umbroiler, a portable solar barbecue grill which folds up like an umbrella. The cooker's four-ft. aluminum reflector focuses old Sol's rays on a ten-in. grill and cooks meat to tasty perfection. The $29.95 device is made by Umbroiler Co., Denver, Col. •

MIMI

MR. BLANC'S SPORTS CAR



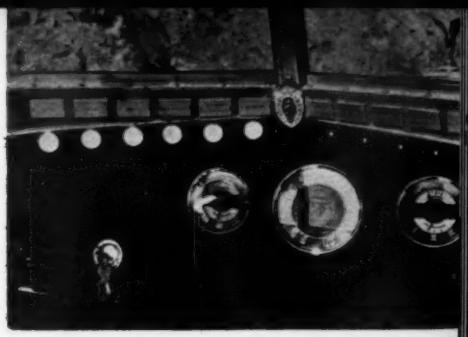
FLYING LADY has no foul-weather driving top, only a canvas top for rainy parking.

THE big, square Rolls-Royce radiator is the most distinguished part of Stewart Blanc's Flying Lady sports car. Blanc, its owner-builder, saved spare parts for ten years before putting the car together. The semi-retired San Francisco mechanical engineer also spent two years and $2,000 building it.

The body is held together with 1,728 aluminum sheet metal screws. The hood is locked but everything can be serviced from the outside. Each liquid reservoir has its own float gauge. To check the oil you remove the filler cap on top of the right front fender and look at the floating dip stick.

The 18-ft. car is the seventh one that Blanc has constructed. •

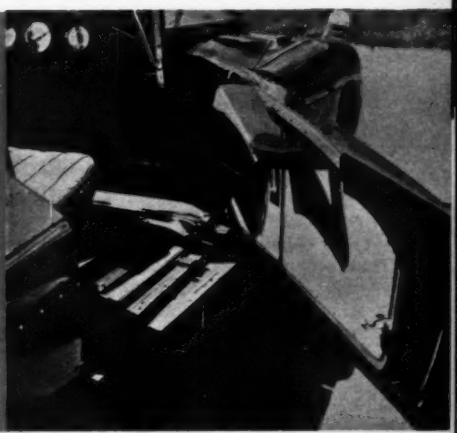
SPARE PARTS car won MI Golden Hammer Award, May 1958. Center headlamp is outlawed, not used; windshield's top is four ft. off ground. Dust cover caps on wheels have unique hidden air tube fillers.



OAK RAILS from old bedstead serve as dash paneling. Note many push-button controls.

LUGGAGE BOX is from 1926 Buick; fenders were also fashioned from a Buick, 1942.

ROLLS-ROYCE radiator imparts dignity. The car's 70-hp engine has done 85,000 miles.



INSIDE door latches work via chain. Car has battery compartment, tool box section.

Hunting and Fishing

BEST WAY TO HOOK FLOUNDER

FLOUNDER COUNTRY—jetties, sea walls, docks, bays and channels in the month of May.

By Wynn Davis

NEWS of the first flounder run of the year spells long-awaited spring to hundreds of thousands of anglers along the coast from Maine to Georgia.

This is the most accommodating of all salt-water fish, the first to bite in spring and the last in autumn. It brings fun to anglers on big city docks, in harbors, along inner channels, up and down tidal rivers and over bays, great and small, as well as to those who like to fish offshore. On top of all of this, flounders are delicious eating, whether they end up as filet of sole, baked halibut or plain fried flounder.

While taking the photo shown above, I met a family of five who drive from Evansville, Ind., to Asbury Park, N. J., every year for the flounder fishing off the rock jetty at Shark River Inlet, south of Asbury. In their station wagon is a huge dry ice refrigerator that holds 160 pound of flounder filets. It always goes back packed to the lid for the deep freeze at home. At 85 cents a pound, they say, the flounder pay a good portion of the trip and provide top eating all summer and fall. I'm told this is a common practice.

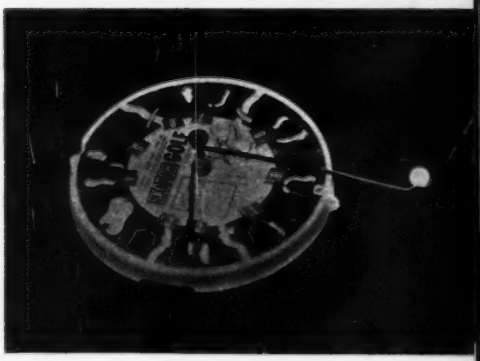
The major flounder runs along the Atlantic are first, the popular winter flounder, March through July with the peak in May and again during October and November; and second, the summer flounder from August through September. Both are numerous from Maine to Georgia. South of this, the southern flounder takes over, all the way to the tip of Texas. On the West Coast it's the starry flounder and the big halibut that pull the crowds and fill the skillets.

You don't need a carful of expensive equipment to get in on this fun. A cheap handline will do. But the popular outfit is the standard salt-water long-butted boat rod with a light Fiberglas tip of from four to six feet and a bay-style reel carrying 100 or more yards of 18-to-26-pound test nylon line. I like a one-handed glass bait rod with a fine precision-built bait casting reel. This gives distance [*Continued on page* 159]

Now See This!

RADIATION alarms for homes—something new to rival ti plants, shadow boxes, Grandma Moses prints and driftwood. At right is the Banshee radiation monitor, which plugs into any standard radio or television receiver. When radioactive fallout seeps into your Blue Heaven, the Banshee wails. Or you can attach it to a portable or car radio and use it to guide yourself out of contaminated areas. The pitch of the Banshee's wail rises as the amount of radioactivity increases, falls as the radioactivity lessens. Tracerlab, Inc., of Waltham, Mass. will eventually manufacture Banshee to retail for about $5. The brain of the Banshee is about the size of a pencil eraser. It uses power only when wailing, not in standby condition. "Banshee" is a Gaelic word; it means a fairy visitant whose wailing foretells death. •

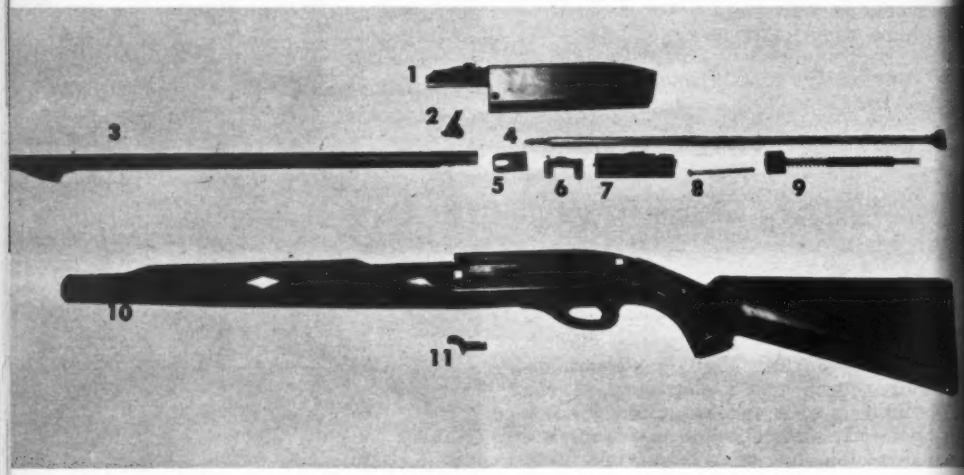
HERE'S golfing for golfers who can't get out to the links and for those who can't get out there enough. Skotch Mfg. Co. of Flint, Mich., has a new indoor course that's a tribute to the fanaticism of American golfers. Skotch Golf is a nine-hole course—3,100 full yards—laid out on a small but hefty metal base. Ball is attached to a rugged reduction gear. Gear uses the motion of the ball to move a slow indicator that shows how far ball would have traveled on an open course. You use woods, irons and putter, face traps and hazards, score as in real golf. $49.50. •



THE Moretti 750 Coupe at left is yet another reason for American devotees of elegant spaghetti wagons to cry *"Mama mia!"* and fork out the old dollars—2,495 of them in this case. Body is hand made and the paint job is 20 coats of hand-rubbed enamel. Engine's a four-cylinder job, water-cooled. It develops 35 hp at 4800 rpm, gets up to 40 mpg, tops out at 92 mph. Importer: JFR Company, North Attleboro, Mass. •

MI TESTS

The New Nylon Rifle



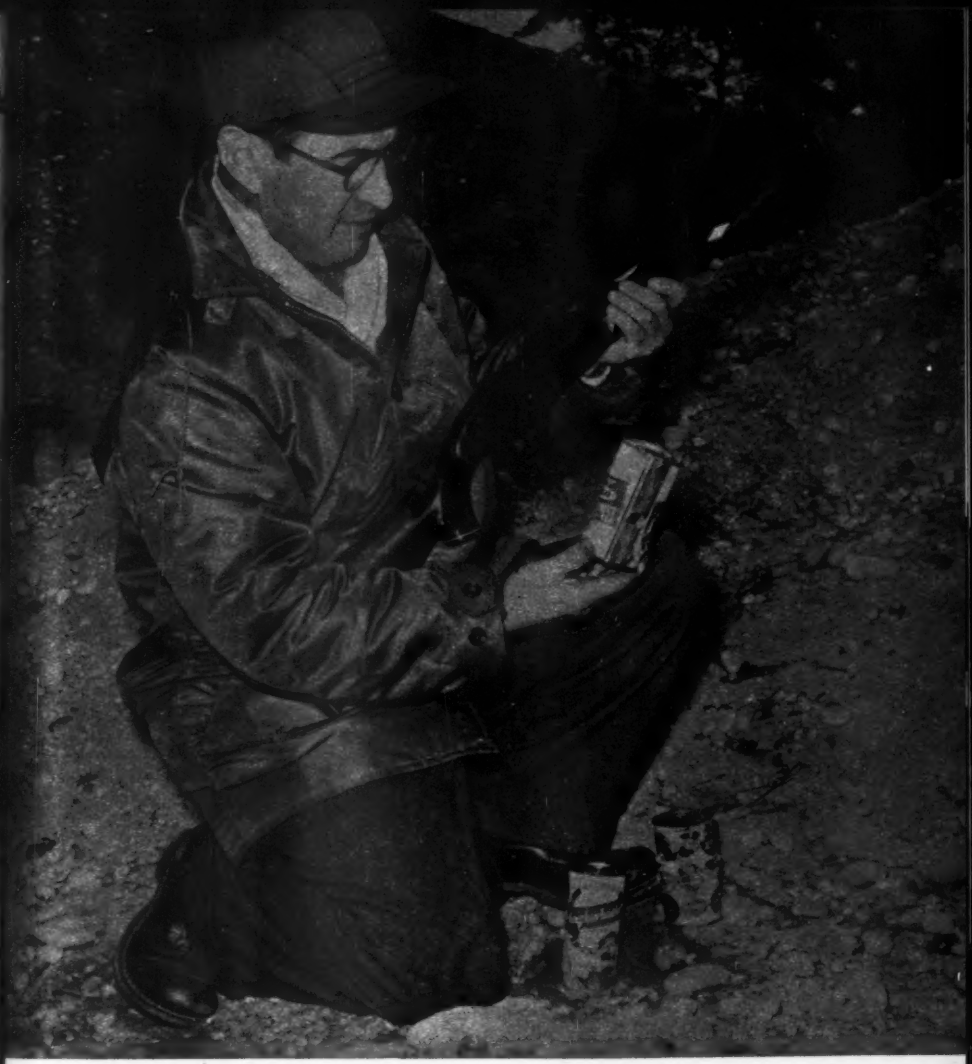
NYLON 66 parts: 1. Cover for receiver section of stock; 2. assembly screws; 3. barrel; 4. magazine rod; 5. barrel yoke; 6. ejector; 7. operating arm; 8. striker pin for hammer; 9. recoil and striker springs; 10. nylon stock, receiver. This consists of two halves which are fused together; 11. nylon operating hook. The other parts are steel or brass.

GUN holds 14 long-rifle .22-caliber bullets and is loaded via trap door in butt.

By Robert Hertzberg

THE "Nylon 66" is a revolutionary new sporting rifle introduced by Remington. It is made of the same material used for everything from the sheerest hosiery to the most rugged machinery. Actually, it is a nylon resin identified as "Zytel" by Du Pont, its makers.

Zytel's claimed advantages are impressive: It won't warp, crack, chip or peel; it is not affected by water, harsh chemicals or fungus; it retains its toughness over a wide range of temperatures;



BEER CANS show results of accurate 50-yd. shots. Majority of 100-yd. shots hit target.

it can be molded to any shape, is strong even in thin sections and is dimensionally stable, although at the same time very light; it can be made in practically any color; it has no corrosive effects on metals and is self-lubricating.

In a conventional rifle, the receiver, the central section that houses the moving parts, is made of steel and is mounted on or in the wooden stock along with the barrel.

In the new rifle the receiver is of nylon and is molded as an integral part of the stock. This design not only allows simpler construction and fewer parts but also permits more accurate "bedding" of the barrel in the stock and better general alignment of the entire assembly. A steel operating arm, which moves the cartridges into and out of the chamber, slides in grooves in the nylon but does not [*Continued on page* 156]

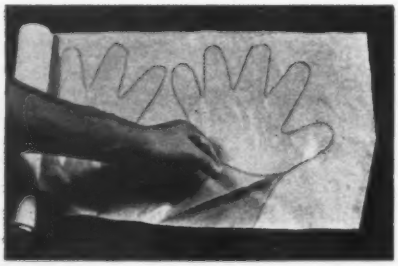
BRIGHT IDEA AWARD MECHANIX ILLUSTRATED

DISPOSABLE GLOVES

PLASTIC glove fits all size mitts—even a gorilla's. Preserve wife's dainty hands.

HAND in glove will never touch paint. Use gloves for grimy work, then toss 'em out.

LET your wife do all those irksome household tasks—like painting the den your favorite color! Give her a roll of 20 disposable plastic gloves and she'll be happy to pick up the brush. Wifey just peels off and dons a pair of the transparent gloves and keeps her paws spotless. The gloves can be used several times, then tossed away. Made by Plasticsmith, Pittsburgh, Calif. •



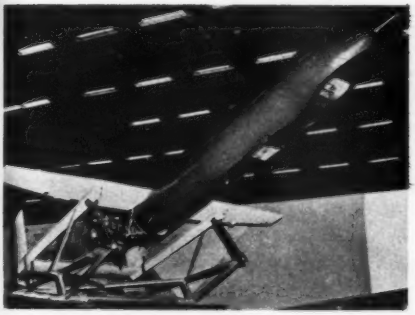
GLOVES peel off the 20-roll pack which fits any standard size paper towel holder.

WIN $50

MI will award $50 each month to the first person who tells us of a new and useful gadget that is patented and in production. Manufacturers are also eligible for this award. Pictures and a description should be sent to Bright Ideas Editor, Mechanix Illustrated, 67 West 44th Street, New York 36, N. Y.

SD-2 DRONE is made by Rheem Mfg. Co.

SD-4 SWALLOW is latest Republic drone.



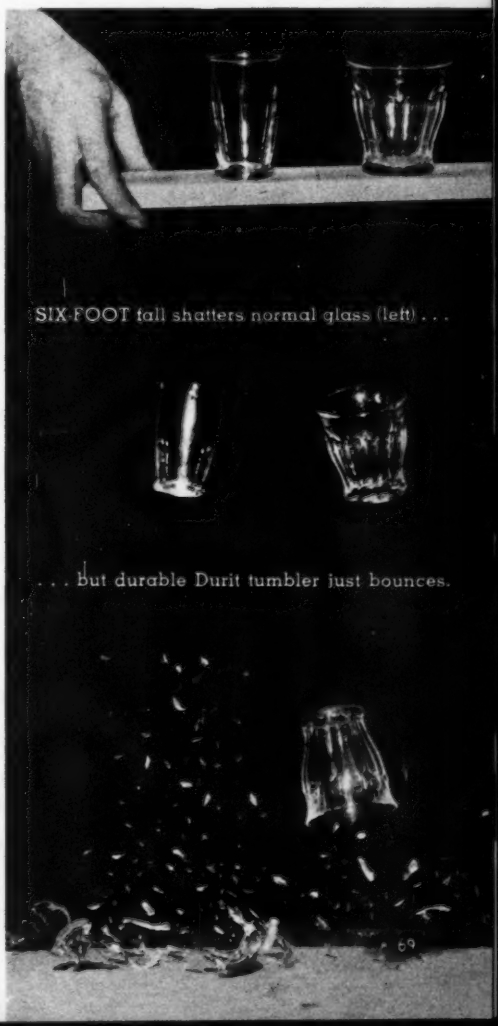
SD-3 is delta-wing jet engine-powered job.

SKY SPIES

SNOOPERS are the latest U. S. Army Signal Corps technique for spying on enemy forces in a battle area. These surveillance drones, equipped with cameras, radar, TV or other sensory devices, would fly low over enemy fortifications and pinpoint vital targets. The remote-controlled drones would be launched by rockets, powered by piston or jet engines, landed by parachute. •

SHOCKPROOF GLASSES

THESE tumblers are tough! You can drop them on the floor as often as you like and they won't shatter. They're great for the kiddies and wonderful for Daddy when he has shaky hands. The tumblers, made of Durit, a Czechoslovakian glass, come with a lifetime guarantee—any tumbler that chips or cracks will be replaced. Price is $4.80 for six eight-oz. tumblers. They are available from the Albe Trading Co., New York, N. Y. •

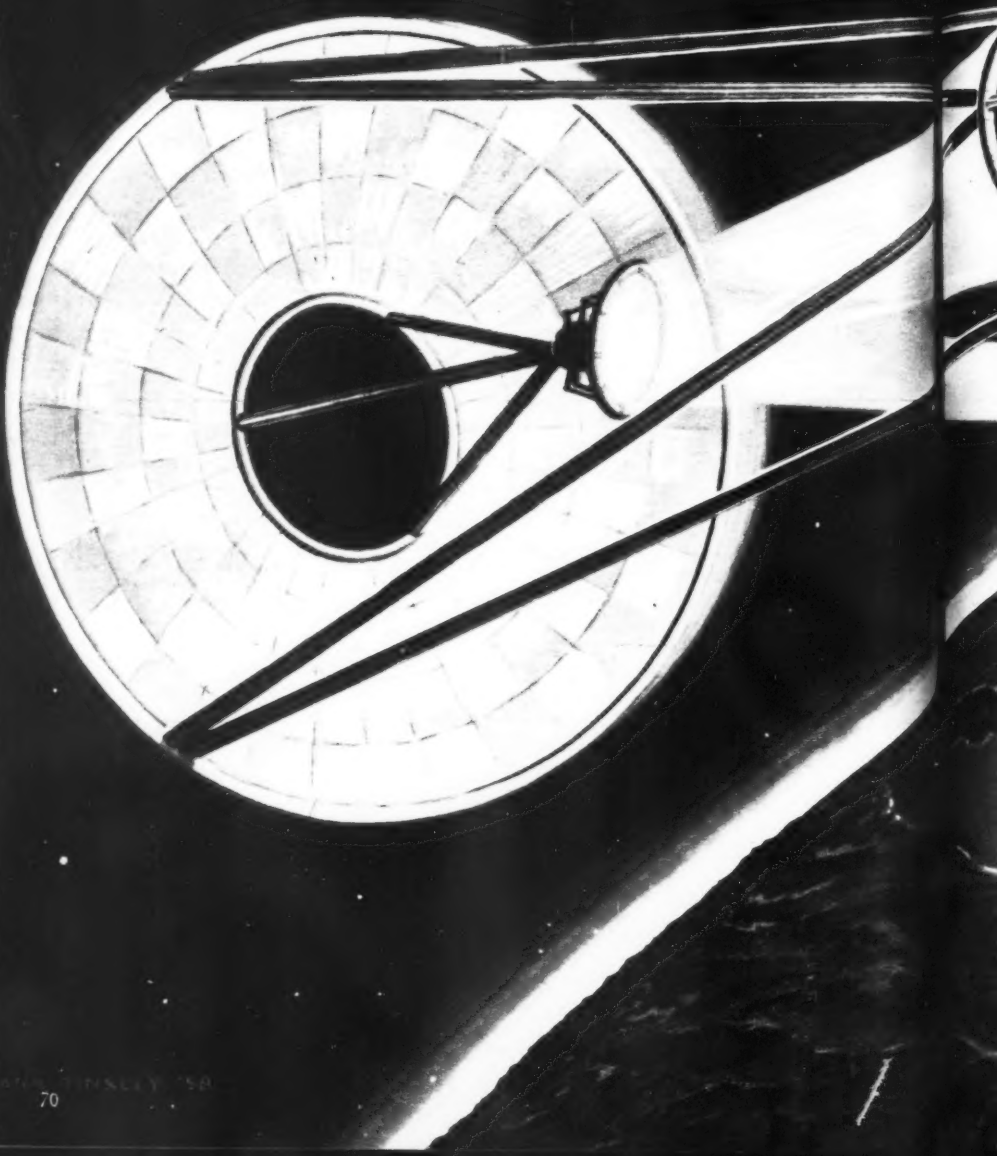


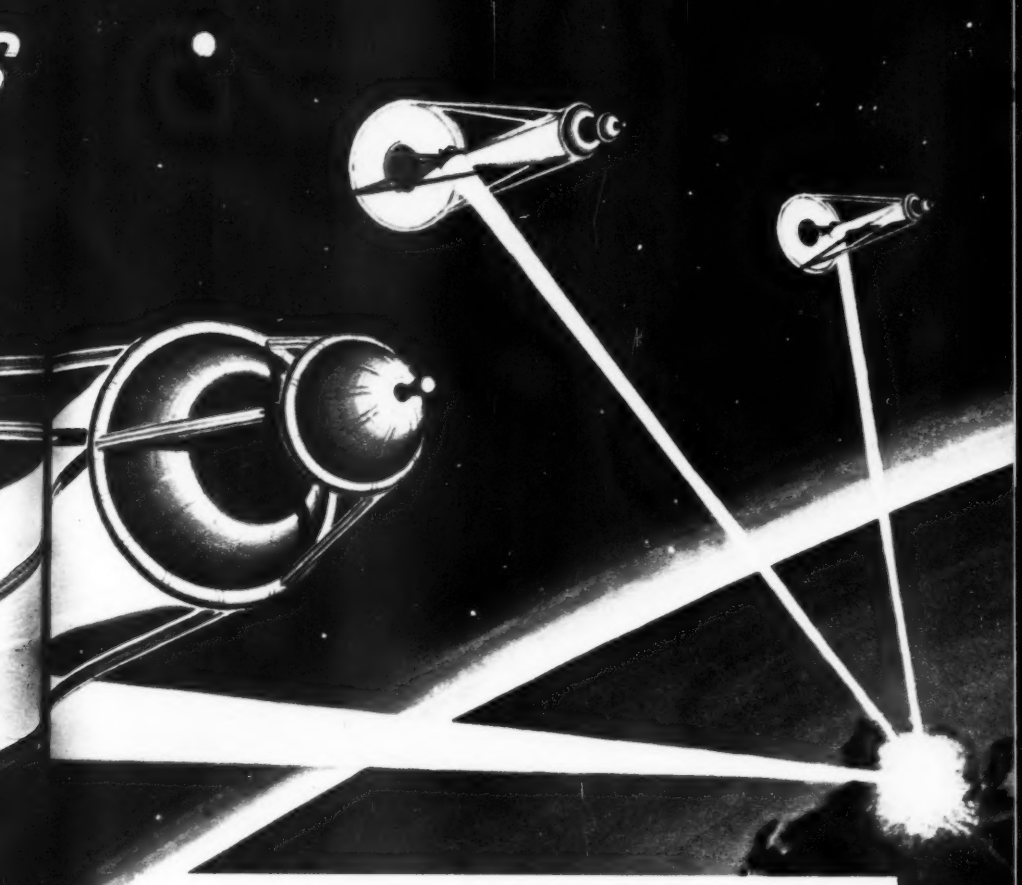
SIX-FOOT fall shatters normal glass (left) . . .

. . . but durable Durit tumbler just bounces.

OUTER SPACE MIRRORS

They can provide solar heating on a grand scale, creating temperate areas for us amid the ageless ice—and very soon, says the prophetic Tinsley.





UNMANNED SATELLITES controlled from earth bases could be used to thaw out sites for submarine bases on the frozen Arctic coastline.

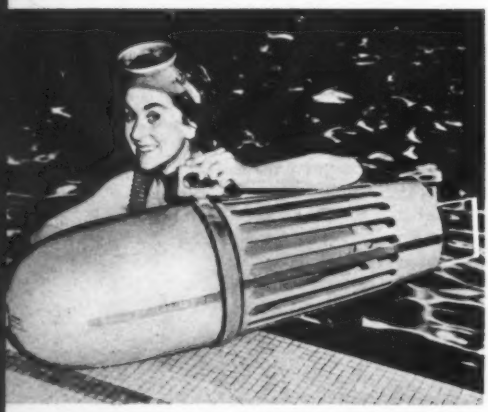
By Frank Tinsley

USING the sun's heat as a military weapon is not a new idea. The ancient Greeks, at the siege of Syracuse, developed a defense system of burning glasses to set fire to the ships of the Roman invaders. Hitler's rocketeers were working on designs for great, mile-wide mirror-satellites that would burn up whole cities from their orbits—which would have been impossible even if the Nazis' rocketry had been adequate at the time. But high on America's list of wonder-weapons is a similar moon-mirror that *could* do the job envisioned for it.

The German burning reflectors would, from their 5,000-mile altitude, have cast a mile-wide image of the sun on the earth's surface. An image that large cannot [*Continued on page* 154]

IT'S NEW!

NEW PET at N. Y. Museum of Natural History is world's largest beetle, 4½-in. Goliathus.



SUB-AQUA-JET tows skin diver underwater for two hours on one battery charging, attains speed of one knot at depths to 100 ft.

PORTABLE FERRY, float, pier, etc., is made up of small units. In a demonstration near London a chopper lands safely on one.

A MILLION MATCHES and more went into this model of St. Anthony's Cathedral, Padua. Matchbuilder Gino Catalano took four years to build it.

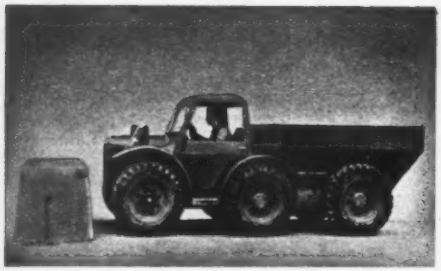
BLIND MAN'S LIGHT in Stockholm has pedestrian-operated signal, gives sound alarm to blind walkers. Signal stops when light changes. Above, sightless Gosta Kristensson tries it out.

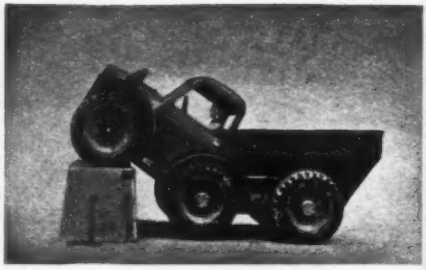
OLD BUS got new look when smart New York patron bought the worn-out rig and converted it to a mobile shoe-shine parlor.

TUNING UP for the road, German composer and band leader William Greihs adjusts a set of bells he plays from driver's seat.

CONTINUED . . .

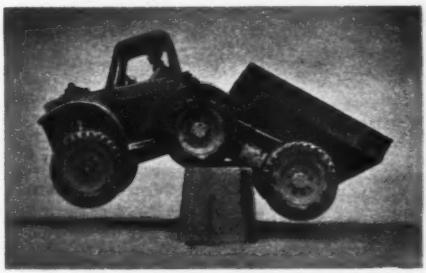
IT'S NEW!

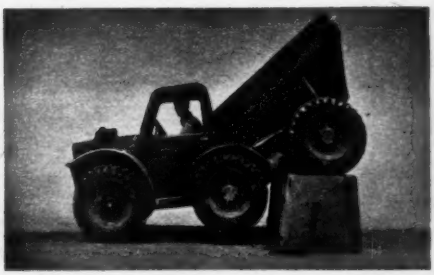




WALL-CLIMBING Swiss Metrac truck uses six-wheel drive, hydraulic jacks, flexible midsec-

ROUND THE BEND come 1,560-ft. sections of Western Pacific rails to be laid in new tunnel near Camp Rodgers, Calif. Thirty flatcars carried them.





tion to clamber over obstacles. Metrac's progress over wall is shown from left to right above.

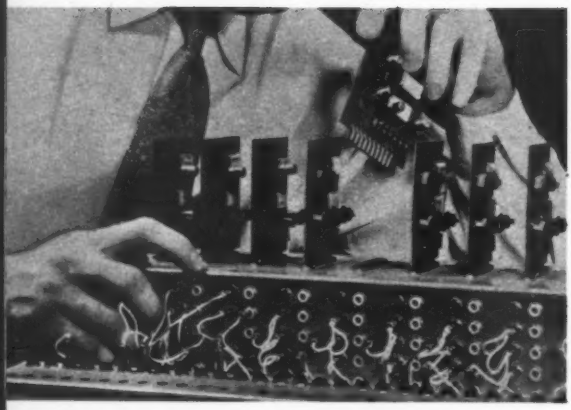
NOT A GUN but a modern Swedish crossbow. Crossbows go great guns over there.

PLASTIC PROP for ships, say its Danish designers, is light, durable and rustproof.

MOPED—trade name of this new muscle-or-petrol-power bicycle—is the latest in Britain's stirring mpg race. Two-cycle motor pushes bike 176 miles to the Imperial gallon. A test model has done 30,000 continuous miles without failure. U. S. price: $200.

Now See This!

MIGHTY MITE is the name of American Motors' new four-wheel drive vehicle now being tested for Marine Corps use. The 1,700-lb. job—a helicopter can air-lift it—sports an air-cooled V4 aluminum engine which weighs 303 lbs. and puts out 55 hp. The Mite can do 62 mph, ford a 60-in. deep stream and climb a 100 per cent grade—a 45° slope. It has a 65-in. wheelbase and a tiny turning radius of only 15¾ ft. •



SCIENTISTS of Bell Telephone Laboratories are attempting to trace the nerve functions of the human eye and ear by means of a simple electronic circuit that simulates the living nerve cell. The "nerve cells" are mounted on three-by-four-in. printed circuit cards. Bell scientists are seeking to find how visual and auditory nerves function and how their signals are interpreted by the brain in a new approach for investigating complex nerve networks. •

MODEL "Eighteen" is a two-seat rotary-wing aircraft of the Umbaugh Aircraft Corp., Ocala, Fla. The craft, with a 17,000-ft. ceiling, rises vertically and can land at ten mph or less which means an airport doesn't have to be handy. The Eighteen cruises at 100 mph and has a top speed of 126 mph. It is powered by a 180-hp Lycoming or Continental Aircraft engine. Colonial Aircraft Corp. of Sanford, Me., will produce the $9,995 ship. •

PEEWEE WEAPONS

WEE precision-made killer fires tiny .156-in. long cartridges. Retail price for gun, 25 shells: $3.95.

PINT-SIZED and deadly is this arsenal of Lilliputian weapons. Each one fires its own tiny cartridge with a loud and ferocious bang that delights gun fans. The pieces shown here, with the exception of the peewee in the top photo, are part of the collection of Robert Abels of New York City. •

TINY .45 can be lost in your vest pocket.

FAMED German Mauser from World War I.

SIX-GUN with powder flask, bullet mold.

SWIMMING POOL ON WHEELS

HINGED living room floor is raised when you feel like taking a dip.

IF you're a man who badly needs something new, you might take a look at the posh "Lectron" house trailer designed and built by Hal B. Hayes, a Los Angeles engineer and building contractor. It features a living room swimming pool with a built-in waterfall which trickles down a picturesque, rock-textured border partition.

The posh swimming pool on wheels is lined with heavy gauge vinyl plastic material and is 7½ ft. wide, 16 ft. long and 5½ ft. deep. A hinged cover serves as the living room floor when the pool is not in use. The hole for the pool (it hardly seems worth mentioning) must be *there* when you park your trailer. Thus one large shovel for your wife or her mother would be a useful accessory if you're an aquatic enthusiast. Water polo, mother?

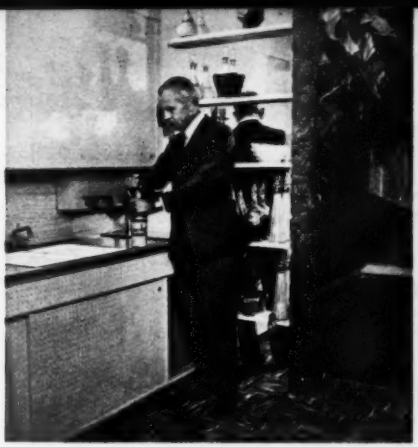
The Lectron also features other little niceties for the self-indulgent. It has, for example, a fully-equipped bathroom complete with tub, shower, toilet and sink; a modern kitchen with a full-size oven, refrigerator, sink and a row of special "liquor faucets" which dispense such heady pleasures as Scotch, bourbon, champagne, beer—and water, if necessary.

The Lectron expands into a spacious four-bedroom dwelling which gives it 1,381 square ft. of luxurious space. The extra bedrooms unfold from the side of the trailer's main body. And, finally, it comes with a built-in living room fireplace, ventilating fan and furniture.

In spite of all these frills, the Lectron costs $4,950, about half of what a conventional trailer of similar design would cost, it is claimed.

The secret of Hayes' dream trailer is its construction. It is made like an air-

TRAILER model is used to demonstrate how the accordioned side walls fold outward to form a bedroom in the four-bedroom unit.

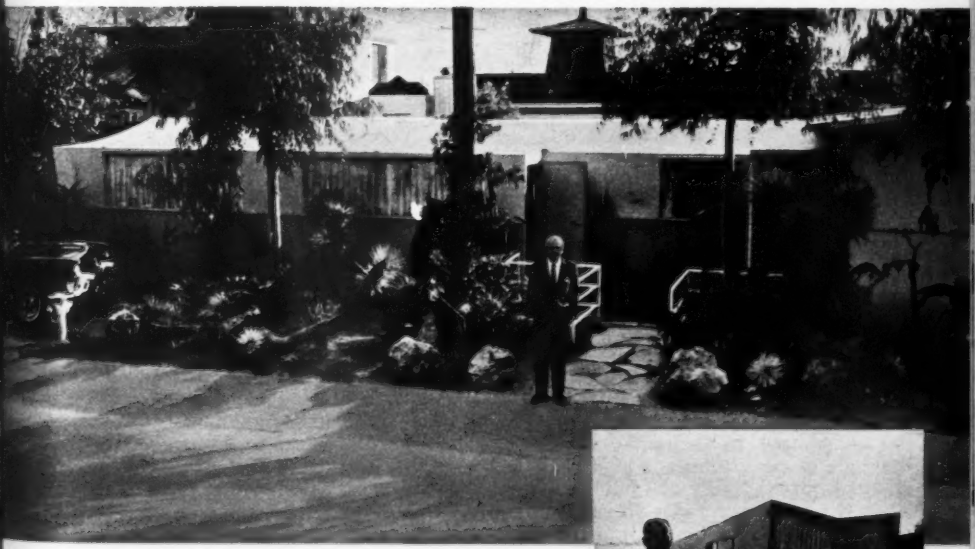


DESIGNER and builder Hayes in the modern kitchen which has a row of liquor faucets.

plane fuselage, has no underlying chassis and is built entirely without framework. This, combined with wood fiber panels, is calculated to give the unit great structural strength. The prototype was pulled at 20 mph over staggered crossties in a rugged durability test.

Hayes' mansion on wheels is the top banana in his house trailer line.

—*Louis Hochman*

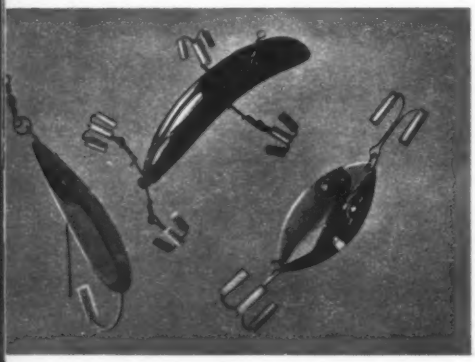


RANCH-LIKE trailer looks like an ordinary house. Right, basic unit without pool, extension rooms.

Now See This!

THEY'VE put juice in the old game of jackstraws—flashlight battery power, it's true, but that's enough. Inside the can, quite accessible to the tweezers, are the plastic straws. Getting them out is a cinch—but you mustn't touch the edge of the hole or a buzzer sounds and a light flashes. Kids get pleasure out of the game but grownups at parties make the best customers for this fascinating waste of time. Electric Game Co.; $1.50; at toy stores. •

THIS tiny gadget is the complete evaporator for a Freon 12 refrigeration system. One of these little chaps can make you 50 pounds of ice a day—handy for juleps. The ice forms on the exterior of the unit; a special conveyor removes it. As an attachment to a standard refrigerator, it can turn fruit juice into instant sherbet. New cooler also eliminates frosting and wilting from the family icebox. Inventor is Anthony J. Ross of Elmhurst, Ill. •



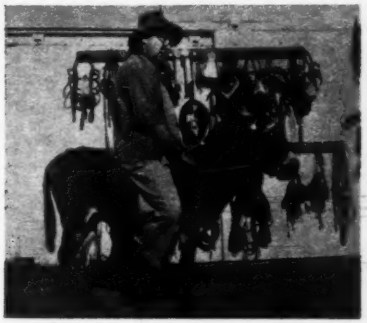
THESE fishhook sheaths, recently announced by Clover Industries of Tonawanda, N. Y., have a purpose that will be readily apparent to anyone who has had a hook in his pants leg or, say, the ball of his thumb. They come in all hook sizes. They are polyethelene. They slip on easily, twist off easily, stay on firmly with assistance from the barb of the hook. Now plugs and spoons can travel around loose in your pocket. •

PAPER camping equipment expected to retail from 20 to 33 per cent less than comparable canvas gear, such as the tents and sleeping bag above, will be in use this summer. The specially-produced paper is reinforced with a web of high-tenacity nylon and was developed by Kimberly-Clark Corp. It will be introduced by Ford Motor Co. and sold by Corporate Research, Inc., of Ann Arbor, Mich. •

DONKEY BUSINESS

BIG BURRO is one of 11 Moyer keeps as pets at his Bucks County stable.

DINKEY DONKEY carries his master who disdains saddle, rides bareback.

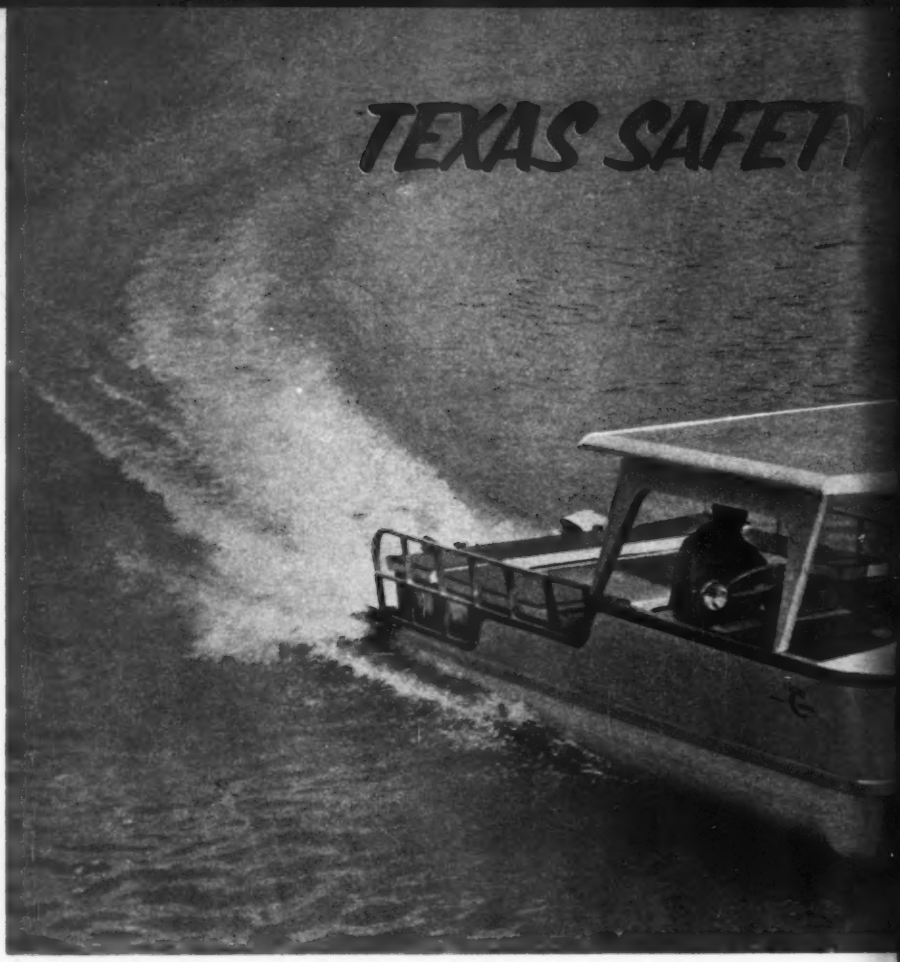


"HITCH them up and drive them," says Moyer. "You'll sure have oceans of fun."

LITTLE ASS pulls sulky. Moyer believes children should keep the animals as pets.

MOST people think of a donkey as nothing more than a stubborn ass. But B. S. Moyer who keeps 11 burros as pets in Perkasie, Pa., calls the donkey man's best friend. The Moyer herd doesn't indulge in any mundane donkey business like toting heavy packs. Instead Moyer uses them to haul people in carts. He's even hitched up a six-burro team—and got them all to move! •

TEXAS SAFETY B

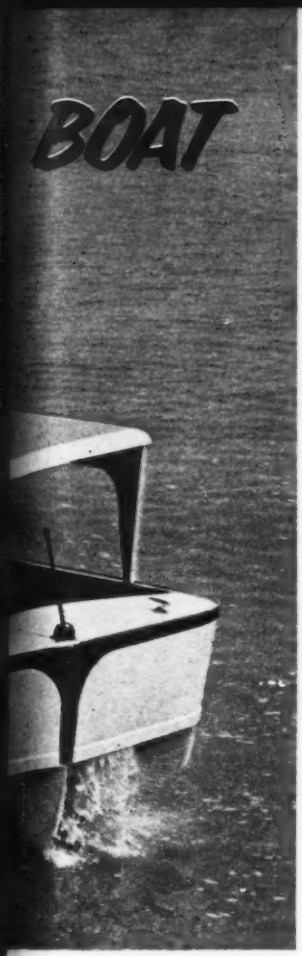


TEXAS CANOE. $4,500 custom-built craft, can do up to 30 mph on twin 35-hp outboards.

THE TWIN outboard engines are mounted on stern bracket. Boat has a full transom.

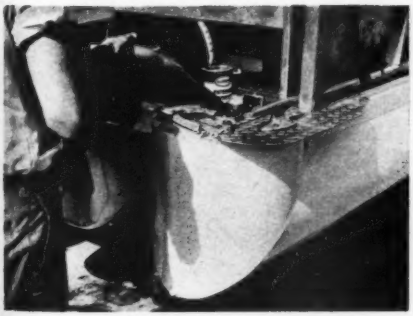
THIS Texas Canoe, according to its designer, James Fontenot of Dallas, is the "safest thing afloat." The idea for the aluminum and stainless steel welded boat was dreamed up by B. S. Bannister. The $4,500 craft—it will be custom-built to order—draws ten in. of water and rides on five tubes, each divided into three compartments.

The 2,000-lb. boat shown here is eight ft. wide by 22 ft. long but will be available in smaller and larger sizes. Two 35-hp outboards give it a 28 to 30-mph speed. It boasts a 160-square ft. deck and is said to handle nicely in winds of 40 mph. •



SAFETY pontoons are divided in three compartments.

SHALLOW draft makes it easy to pull up near shore.



GASOLINE to power the outboard engines is put into stern end of this safety pontoon.

CONTROLS are simple and the craft is navigated by automobile-type steering wheel.

SPEED WEEKS '59

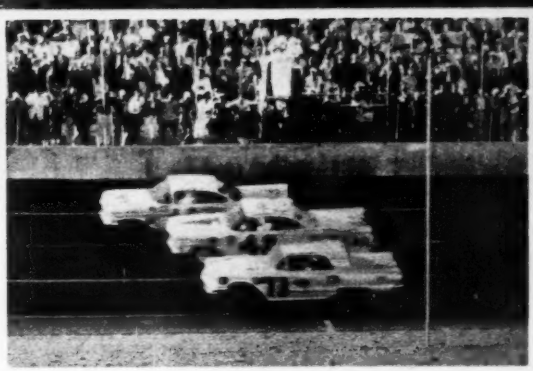
Speed records, the new race track and plenty of rhubarbs marked the exciting stock-car racing session at Daytona.

By Tom McCahill

SPEED WEEKS 1959 will go down in automotive history as the event which produced faster speeds and more protests and general disorder than any show since the day the lions hopped into the box seats at the Roman Coliseum.

Daytona Beach, renowned for the world's greatest beach events, this year saw the birth and introduction of the world's fastest and safest 2½-mile race track, an asphalt-paved circuit where a stock (family sedan) car averaged 135.521 mph for 500 miles, only .08 mph slower than the record made at Indianapolis in 1957 by an out-and-out Grand Prix car. The famed beach events (of which the writer was the Director) were heavily overshadowed this year by the publicity afforded the new Daytona International Speedway.

MI TROPHY winner Bob Pemberton, left, is congratulated by editor Bill Parker.



AERIAL view of new Daytona International Speedway. Photo finish, right, occurred between Lee Petty (42), and John Beauchamp (73) in 500-mile race. Petty took top honors. Third car wasn't in the final lap.

Despite this, the speed trial entrants running on the beach (and the spectators) were greater in number than ever before. When I arrived on the beach in the pitch blackness of six a.m. on the first day, I was as surprised as the bride when the groom said "I don't." There were several *thousand* pre-dawn spectators on hand and the Inspection Station which passes on all entries had been jammed for two hours.

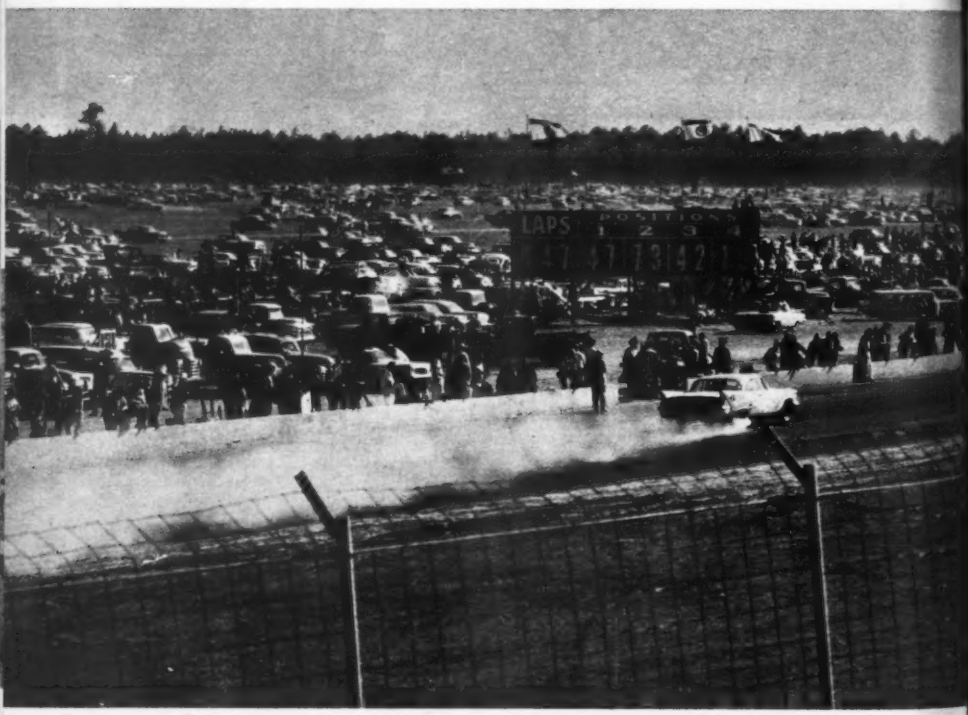
Space limitations won't allow me to go into all the details of every class win but I will cover most of the highlights. For example, the first notable boo-boo of the week came in the Big Three Class, which is just about as important a run as we have. A Plymouth Fury ran away with this class, trimming both the Ford and Chevrolet, only to be disqualified by a goof pulled by some clerk back in Detroit a good six or eight months earlier. When the winning Plymouth was torn down for inspection, it was found to be 100 per cent stock and absolutely straight—except for one serious item. According to the Automobile Manufacturers Association specification sheet (on which all competition inspections are based) the Fury had valves smaller (get that, *smaller!*) than called for. The Chief Engineer of Plymouth happened to be right on hand at the time (as he was apparently vacationing in the area) and he assured our Inspectors that no 1959 Plymouths had ever

100-MILE Convertible Race on new track. Shorty Rollins' '58 Ford won at 129.5 mph.

been built with valves other than the size about to be disqualified.

A few phone calls to the factory subsequently cleared up what had happened. The Plymouth boys had filed pre-production specifications with the A.M.A. early in the summer of '58. Although they later sent in a correction on the valve size, this change wasn't recorded before the December 15 deadline for stock cars, due to a clerical error. And so the Plymouth was cheated of its rightful win by a stupid little mistake and Chevrolet slid home the winner.

Another rhubarb took place in the Class 7 Production Car Flying Mile. This is the biggest and fastest class for the National Speed Trials Championship. In the first five spots all the cars were Pontiacs. But then a bushel basket of protests and counter-protests was dumped on the inspectors by drivers and backers of the top cars, claiming "this guy was running six-ply tires against my standard four-ply." Even racing tires (which are permitted according to the rules) were protested for being six-ply, although they don't make four-ply racing tires. There were some further remarks about an air scoop having been used, concealed and then



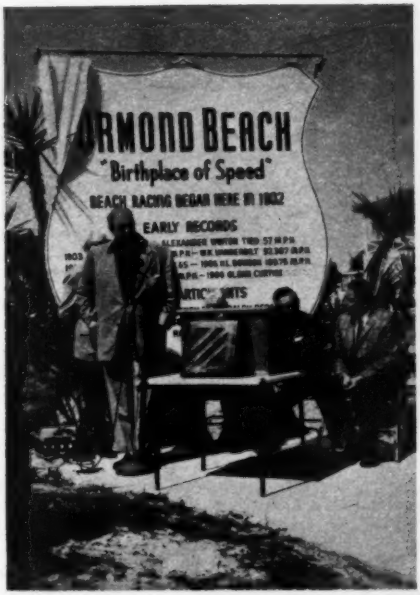
PIT STOP is made during 500-mile race on the beautiful two and one-half mile raceway.

FLYING MILE entrants on beach. Pontiac-driving Sonny Belt averaged 137.72 mph to win.

removed before inspection, and verbal brickbats filled the air.

The whole thing soon gathered the momentum of an Irish saloon fight. It got so out of hand that Norris Friel, NASCAR's Chief Inspector, disqualified the entire class for "unsportsmanlike conduct." The event was re-run the following Monday, the day after Speed Week, before a handful of spectators and a group of red-eyed, disinterested officials. Yep, Pontiac won again, with driver Charles "Sonny" Belt of Memphis, Tenn. posting a two-way average of 137.772 mph.

The MECHANIX ILLUSTRATED One Mile Standing Start Championship also got off to a bad start. Over 200 cars (the biggest list ever) had entered the event which was scheduled for Thursday, February 19. Unfortunately, a 40-50 mph westerly wind the day before had roughed up the beach until safety officials (not including the writer) thought it would be too dangerous to run on once the tide had gone out. This was deucedly clever on the part of these officials as the decision [*Continued on page* 148]



DEDICATION of Ormond Beach as birthplace of beach racing, 1902. Tom speaks.

CHRYSLER 300 E piloted by Brewster Shaw was third in MI Standing Start Mile. Last

MI Day At Daytona

Illustrations by J. George Janes

PENCIL PHOTO catches two interested spectators—MI editor Bill Parker, Tom McCahill.

A FOUR-DAY postponement due to poor beach conditions failed to put a damper on the popular MECHANIX ILLUSTRATED One Mile Standing Start Championship. MI editor Bill Parker, Official Starter, saw Bob Pemberton, Lansing, Mich., win the MI Trophy with an average 87.082-mph speed in his '59 Pontiac.

The Flying Mile course—cars have two miles to build up speed before starting run clocked by mechanical timers—was officially opened by NASCAR Speed Trials Director, Tom McCahill, who drove a station wagon with Bill and Mrs. Parker to test the track and timing devices. The all-MI wagon clocked an official 114.653 mph.

The famous beach, despite the new track, will still be used for speed runs. And during Speed Weeks you can still take a crack at the measured mile. If you do 100 mph or better, you receive a NASCAR Certificate and join the Century Club.

Another year, another great Speed Weeks of fun and old friends. See you again—next year! •

year Shaw drove off with top honors in his Chrysler 300 D.

DAYTONA MEASURED MILE BEACH EVENTS WINNERS

MI Acceleration Runs

Class 7: Bob Pemberton, Lansing, Mich. '59 Pontiac. 87.082 mph. Class 6: Frank H. Hughes, Williamsburg, Va. '59 Chevrolet. 83.217 mph. Class 5: Harry Perry, Elizabeth City, N. C. '59 Chevrolet. 83.565 mph.

Flying Mile Runs

Class 7: Charles Belt, Memphis, Tenn. '59 Pontiac. 137.772 mph. Class 6: Charles Johnson, Nags Head, N. C. '59 Chevrolet. 131.723 mph. Class 5: Mike Reagan, Buffalo, N. Y. '59 Chevrolet. 114.503 mph.

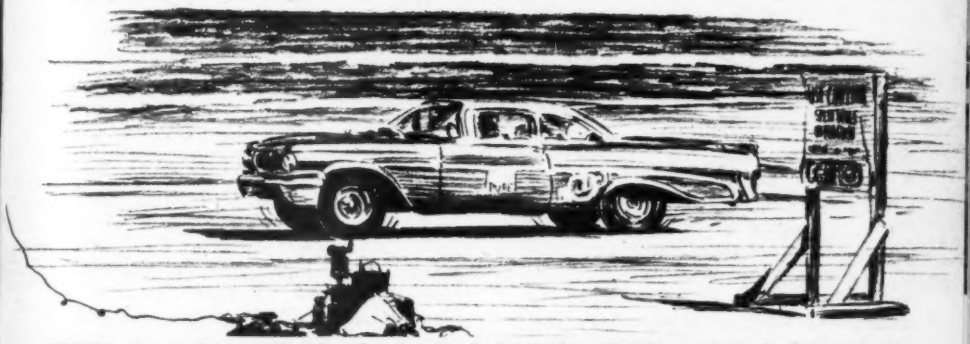
Prestige Class

Harold Issenberg, Daytona Beach, Fla. '59 Lincoln Continental. 115.83 mph.

Big Three Class

James Quinn, Oneonta, Ala. '59 Chevrolet. 118.46 mph.

START of Standing Start Mile run shows this Chevy's rear wheels kicking up the sand.



FINISH shows Pontiac flashing by timer which clocks official speed made by each car.

McCAHILL TESTS The SIMCA Vedette

"SIMCA is good-looking, but Gallic?—never!" says Tom. Car has a 106-in. wheelbase.

Saucy, shapely and strong, this Parisian-made rig offers economy with a top 90-mph speed and many little "extras" that American cars lack.

By Tom McCahill

FROM Paris (and we mean France) come a lot of things aside from Christian Dior originals, perfume and French postcards. The Simca is the Chrysler Corporation's Parisian import. Chrysler bought out Ford's interest in this company almost a year ago, which makes this Simca quite a hash. From the Studebaker "S" on its hood to its Dodge fin tail lights, it is about as Parisian in looks as an Irish clay pipe. It is good-looking, but Gallic?—*jamais!* Simcas come in as many shapes and sizes as girls do and are powered by four- or V8-cylinder engines. When we get to the engine room, the heavy hand of the former owner, Ford, stands out like a pastor with horns.

Our test car was the V8 Vedette Beaulieu. The minute the hood was unlatched, the engine looked strangely like a flat-head Ford 60 mill of 21 or so years ago. Now, before you get stuffy about this "totally new concept in imported car power" (which the publicity agents label this Simca), let me quickly point out the Ford 60-type V8 is easier to hop up than a Chinaman with an opium pipe. On the midget tracks of the nation, many a re-worked Ford 60 engine walked off with the heavy silverware and money and quite often whipped the spots off the famed Offenhauser midgets. I first tested the Ford 60 more than 20 years ago in its original docile suit, pulling a big-bodied sedan, and it was nothing to pop stars into little boys' eyes. When re-worked, though, the story can be quite different.

This similar-powered Simca is pretty hot stuff in the small import field but someone goofed in the transmission set-up. A four-speed gearbox is available with the four-cylinder Simca but only a three-speed box is supplied (at this writing) with the V8. With a good four-speed transmission this car ought to be able to perform right up there with the Swedish Volvo, which we ran alongside the test car for comparison. As it stands, however, it is undergeared

UNCLE TOM calls Simca "a top-flight cornering car with positive control."

TEST CAR SPECS

MODEL TESTED: **Simca Vedette four-door sedan**

ENGINE: **V8** cyls; **143.46** cubic ins; **84** brake hp; **112** ft-lbs max torque; **7.5** to **1** compression ratio. Bore **2.6** ins; stroke **3.37** ins; Fuel required: **Regular.** Standard axle ratio: **3.9.** Wheelbase **106** ins; length **187** ins; height **57** ins; width **69.7** ins; front tread **54** ins; rear tread **53** ins. Weight **2,744** lbs. Gas tank capacity **15.8** gals. Turning circle diameter **18.8** ft. Tire size **6.50X15.**

PRICE (without optionals): **$2,298**

PERFORMANCE: **0-30** mph, **4.9** secs; **0-50** mph, **10.9** secs; **0-60** mph, **16.8** secs. Top speed **90** mph. All times recorded on corrected speedometer.

ECONOMY run was made with Simca at Daytona with exact amount of gas in tank.

TIMING GEAR clocks car. It got 37.5 mpg at 15-plus mph; averages 25 mpg on road.

STEERING post twist-switch controls lights. Dash has trip meter, ammeter.

in the low end and overgeared at top. On the flat, I squeezed better than 87 mph out of this car. On the new Daytona International Speedway, where I also tested it, using the steep bank as a chute, it got up to a little over 90 mph. In a drag race with an old-type three-speed Volvo, the Swede had it in every department, especially in top gear. But as economy imports go, this Simca is a hot car as delivered, turning out 0-30 mph in 4.9 seconds and 0-60 mph in 16.8.

Now you can end the story there and be happy with the Simca. Or, for just a small amount of money (meaning under two hundred bucks) you can turn this into a performance wildcat in its class by just calling on any speed shop where hop-up equipment for the flat-top Ford 60 V8 is still available. Dual headers and high-compression aluminum heads might be your first step, boppier carburetion and sharper ignition another.

In fact, if you feel real sporty, for around three hundred bucks you'd have a rig that should turn 100 mph and knock out 0-60 with ease in 11 or 12 seconds. Basically, the flat-top engine is good. It is the kid brother of the MI Ford engine I hopped up ten years ago (How To Hop Up Your Car, February 1950 MI). This job in stock condition has a 7.5:1 compression ratio. With 9 or 9.2:1 and using high-test gas, the Simca could be turned into a flame-thrower for brushing off the rally set. As before noted, performance-wise it could run right up there with the Volvo —and the Volvo, as most of you readers know, is tops in the small import field.

Economy is an important point with all smallish imports. So when an economy run was arranged as one of the events during Speed Weeks, I entered the Simca to [*Continued on page* 150]

MONSIEUR trunk-tester Jim McMichael went back for his beret. Trunk has 18 cu. ft. of space.

CHRYSLER styling is seen in lofty fins. "This is a comfortable car for four," says Uncle Tom.

WALK SCRUBBER and snow remover—rugged wire brush attachment for present power mowers. F. X. Leonard, Louisville, Ky.

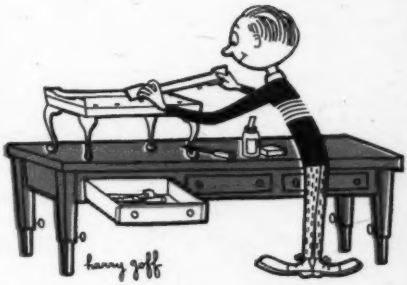
DISPOSABLE SINK STRAINERS of foil or processed paper—for easy collecting and dumping. Jerry Fisher, Elkhart, Ind.

NAIL CATCHER for manicure scissors and clippers. Prevents loss of parings in rug pile. Robert Camp, New Springfield, Ohio.

INVENTIONS WANTED!

Is there a gadget you think should be invented? If so, send its description to Inventions Wanted Editor, MECHANIX ILLUSTRATED, 67 West 44 St., N.Y. 36, N.Y. Each one printed will be awarded $5.

BUMPER ALARM to tell you when you're all the way in the garage. Good for long, long automobiles. Tom Keller, Chicago, Ill.



HIGH-LOW WORKBENCH, to be raised or lowered to fit either the job or the worker. Irving Perkins, E. Chicago Heights, Ill.

MONEY MAKING IDEA

HE'S STUCK WITH SUCCESS

By Robert Edwards

JACK LEUTZINGER inspects freshly molded Putty-Stik.

FILLING holes: when excess is wiped off no clue remains.

SOMETIMES the sideline is a quicker route to success than the featured product. So John F. Leutzinger found it when he developed his Putty-Stik. Now his new factory in Seattle, Wash., is turning out 250,000 to 350,000 of them every month —on overtime, to keep up with the nationwide demand. At 39 cents per stick, that's up to $136,000 per month. After the retailer, distributor, and manufacturers' representatives take their cuts, that's still around $2,200 per day at his price of 14 cents.

Back in 1949, Jack was developing a good business selling pre-finished plywood, mainly for use as wall paneling. By time and time again, conversations with his customers ran something like this:

"How do I put this on the wall?" the customer asks.

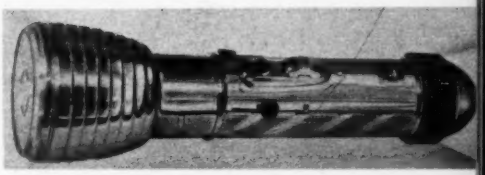
"Three-penny finishing nails into the studs," Jack would answer.

"But what about the nail holes?"

For this Jack didn't have a good answer. "How about trying glue?" he [*Continued on page* 153]

Now See This!

TIN LIZZY is a half-scale replica of the famous 1910 Model T Ford. It has a steel frame and a body of molded Fiberglas with a 50-in. wheelbase. The vintage miniature sports a brass-colored radiator and headlamps and bright red wooden-spoke wheels. A rugged three-hp, four-cycle gasoline engine with a recoil starter supplies the power. The speed maximum can be set for the youngsters as desired. Normal speeds are up to ten mph but it can be set to run faster or slower. The kids will love it. •



ASH-FLASH tri-color (red, white, green) chromeplated flashlight has a blinking taillight. A button controls color changes. It has an adjustable focus (spot or floodlight) a separate switch for blinker and signal flash. H. J. Ashe Co., Glenbrook, Conn. •

SAFETY SUIT for skin divers comes in kit form with patterns, glue, color touch-up and instructions to make hood, jacket, pants and sox. The Ensolite suit is available in three sizes and four colors—white, green, blue and red. Skope Mfg. Corp., Norwood, Mass. Price: about $44.95. •

A NEW, cool-operating radio tube glows blue instead of red and uses less than one-tenth the power of a standard hot cathode tube. The "cold cathode" tube developed by the U. S. Army Signal Corps and Tung-Sol Electric, Inc. of Bloomfield, N. J., may lead to smaller, simplified communications gear. •

COZY CABIN is a hideaway anyone can build at the mere loosening of a purse string.

BUILD A MODERN VACATION HOME FOR $275!

By Ralph S. Wilkes

THIS little hunting cabin and week-end retreat was built by the author for $275. It can later be expanded as time and finances permit. The cabin can be erected on 2x12-inch skids should you anticipate moving it at some future time to make the site available for a larger house. With this in mind, the porch was added in such a way that it is readily detachable from the cabin.

Siding for the cabin consists of four sheets of half-inch Homasote—two 8x12 feet, and two 8x14 feet. Four inches are gained each way by leaving two inches of exposed studs—to which the trim is nailed—at each corner. Therefore, the 2x12-inch "runners" (lengthwise sill pieces) will be 14 feet, 4 inches

long and the cross-sills and floor joists 12 feet long.

The cabin's basic frame forms the sill. It rests on six large flat rocks and must be carefully leveled. A more stable foundation would require the construction of concrete piers below the frostline. Anchor bolts set in the piers would then hold the sill.

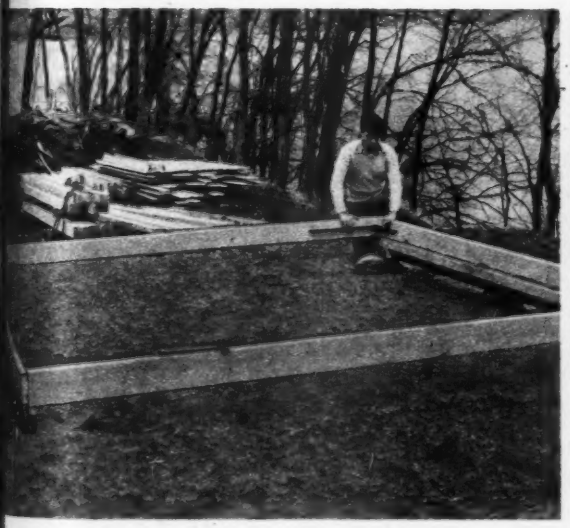
Rough lumber can be used for the sill and joists. Including the outside sill pieces, there are ten joists spaced every 19 inches. Nail cross bracing between the joists to "firm" the floor. For this cabin, one-inch matched flooring was laid and the ends trimmed along the outer edge of the sill with a portable power saw. The flooring was obtained from a house-wrecking concern for ten dollars (new material would have cost about three times as much).

Once the floor is down, a level surface is provided on which to construct the front and back walls. Planed 2x4's are used for the framing. The walls are built flat on the floor, then erected, spiked in place, and held upright by scrap boards nailed diagonally from the corners to the side of the sill.

With front and back walls vertical and parallel, the rafters then go into place after first being tapered to 2½ inches at the ends. The slight pitch of the rafters may make notching unnecessary, although in this case the plate was notched about a half inch at the point of contact to give each rafter greater bearing surface. Space the eight rafters evenly over the 14-foot, 4-inch plates so that they're a bit over 24 inches on center. The overhang is about eight inches at the back and ten inches at the front. The tapered rafters will allow four-inch roof trim boards to be used on all four sides.

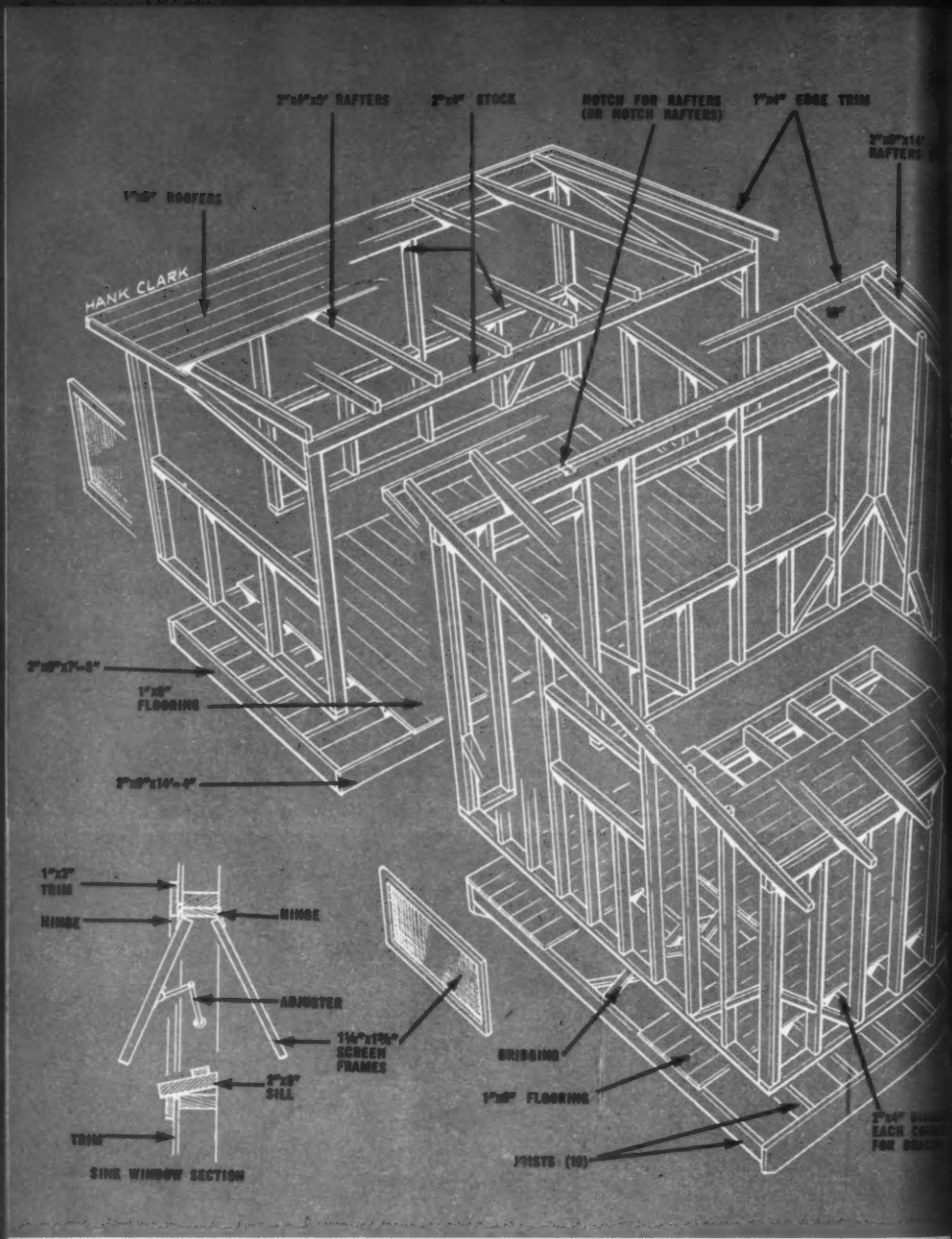
Along the side walls 2x4's are spiked to the floor from front to back and marked for the studs which are placed 16 inches on center. Use a level or plumb bob to be sure each stud is vertical, then mark each stud at the rafter and notch it (or the rafter) to fit before nailing in place.

The location, size and type of windows are matters each builder will decide for himself. Secondhand windows were installed in this cabin at a cost of $1.50 per sash and are the separate sashes of upright double-sash windows, trimmed to fit and turned sidewise for mounting.



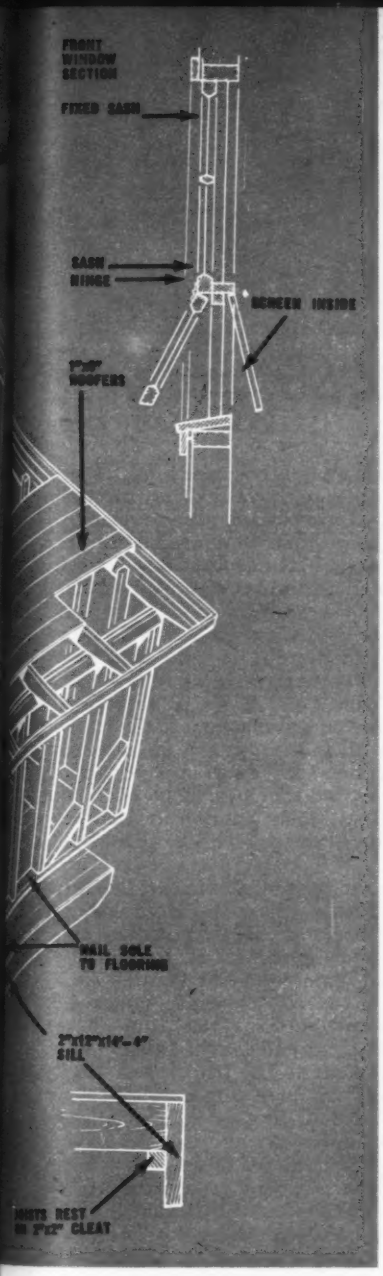
2"x12" SILL measures 12'x14'x4". Arrange large, flat rocks under corners to support and level sill.

FLOORING is nailed crosswise to joists. Used flooring cost only $10.



The lower edge of the sash over the sink is beveled to fit the sill, then hinged at the top and equipped with a storm-window adjuster to hold it at the desired position for ventilation.

The front windows are two-pane sashes installed horizontally with a single-pane sash hinged below each so it will tilt outward. Window installation is left until the late stages of con-



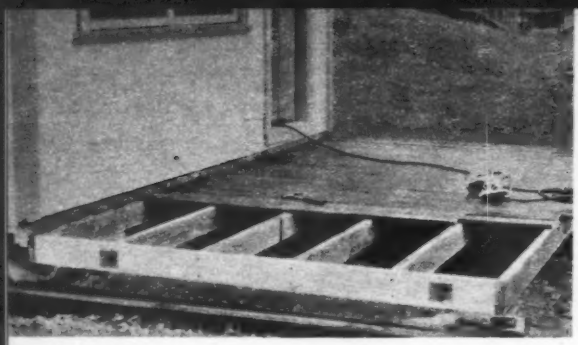
FRAMING for rear wall is nailed together on cabin floor. Note doubled 2x4's at sides and top.

RAFTERS (eight 2x6's) are cut to size, tapered at their ends, notched, then nailed into place.

"PRE-SHRUNK" (see text) 8'x12' Homasote sheet is positioned and nailed into place on framing.

struction but framing must be planned in advance to provide proper openings for the door and sash frames.

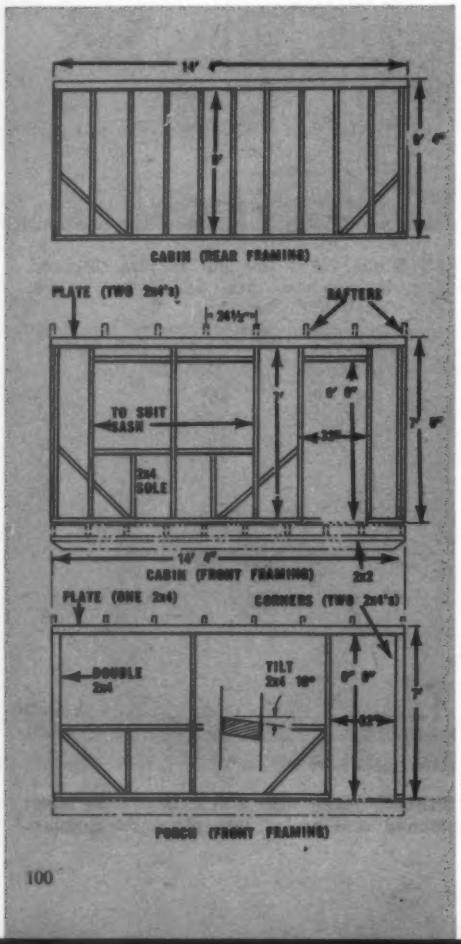
The first step in applying the



DROP PORCH FLOOR about six inches below cabin floor so that cabin roof will overhang porch roof.

ASPHALT roll roofing is lapped, then nailed down over roof boards.

Putting on Homasote—or any other exterior insulation board—demands careful reading of the manufacturer's directions. Homasote must be expanded before use, so lightly sprinkle each sheet on both sides with water. They are then laid flat on top of each other overnight, but not more than 48 hours before use.



A section of Homasote is now set into position while the upper edge is scored and cut to fit snugly under the rafters. The piece is then raised and nailed into place by framing it in with lengths of trim at the corners as shown in the drawing on page 101. Then use rustproof nails to fasten this material to the frame.

When all four sides are up, saw out the openings for door and windows. After this, the roof boards go on. Trim their edges, then apply the 1x4-inch trim before laying the asphalt roll roofing.

Close the openings between the rafters by fitting pieces of Homasote in them. Screening can be installed over three rafter openings at the middle, front and rear to provide ventilation.

Roll on a coat of white undercoat paint before applying the trim. After that apply a second coat of outside paint and two coats to the trim.

Smooth the floor with a rented floor sander before laying down the linoleum or other floor covering.

Advice should be obtained from the local power company as regards wiring specifications, since inspection will be required before power is supplied. Wiring this cabin is a simple job. It consists of installing four outlets around the room, a ceiling light over the sink, and an outside floodlight. Switches are located inside the door. If a hot plate will be used instead of a range, two-wire service of 120 volts will be sufficient.

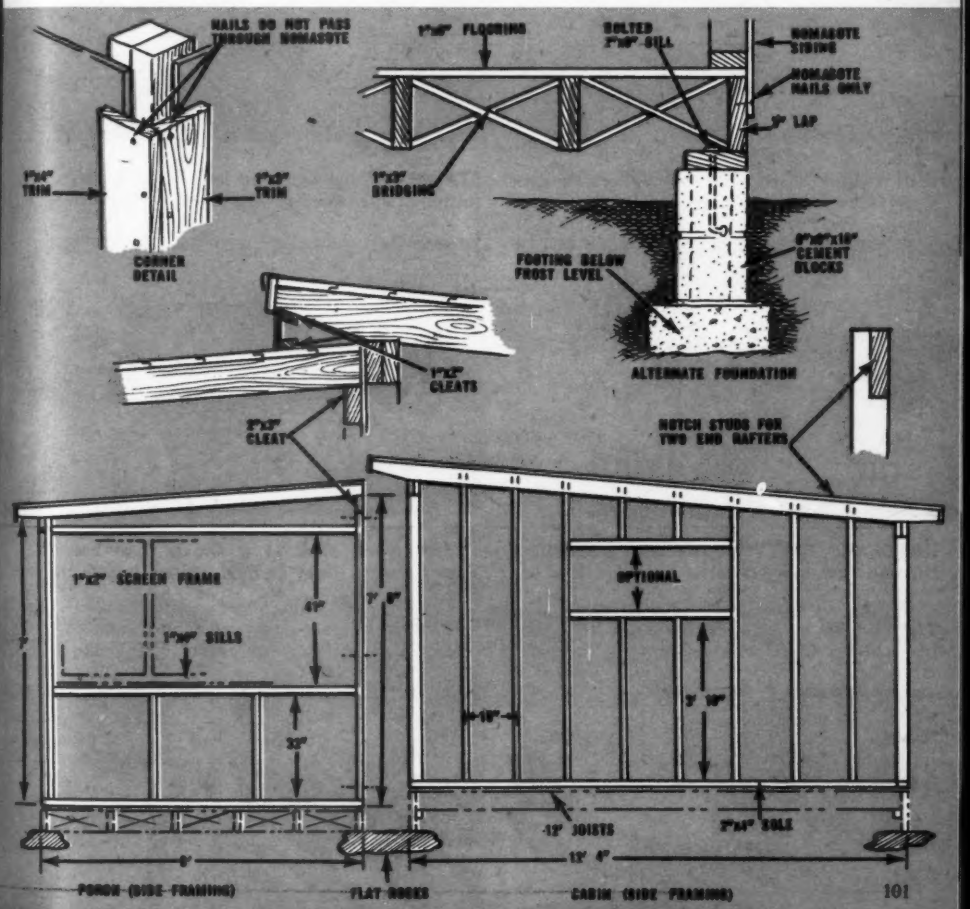
No provision has been made for heat-

NAIL fitted cuts of Homasote under ends of porch roof and around porch railings.

COMPLETED CABIN, including the porch, has total floor space of over 280 sq. ft.

ing the cabin. Due to the tight construction and good insulating properties of the siding, a portable electric heater with circulating fan will keep the cabin comfortable in cool weather.

A porch can be added whenever desired. It is attached with bolts and lag screws which [*Continued on page* 144]



LINSEED OIL

THIS versatile actor can play many roles other than its most common one as a vehicle for paint. A few of its many uses are pictured and described on this page. There are two types of linseed oil: raw and boiled. It is the boiled linseed, which contains dryers, that is generally used in paints.—*J.Z.*

SCREWS turn in easier if first dipped in raw linseed. Oil also prevents wood rot.

RUB boiled linseed oil on garden tools; it smooths handles, keeps metal rust-free.

STAINS may be removed from furniture by rubbing with alcohol, then boiled linseed.

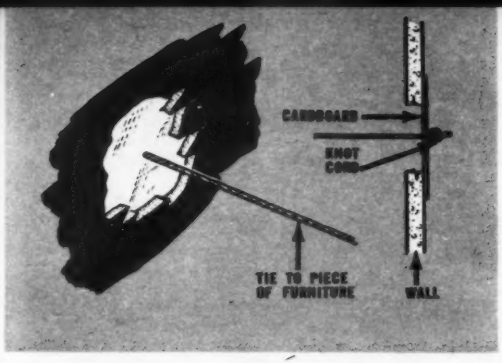
HARDENED PUTTY will become malleable if some raw linseed oil is kneaded into it.

SNOW won't stick to a shovel that has been given a light coat of boiled linseed.

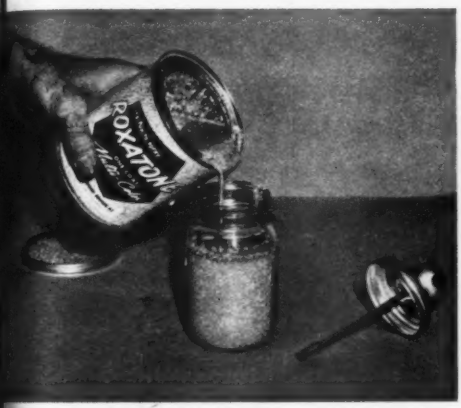
TAR SPOTS on auto bodies will come off by rubbing them with either type linseed.

LADDERS which get an occasional coat of boiled linseed tend to resist splintering.

FRESH PAINT TIPS



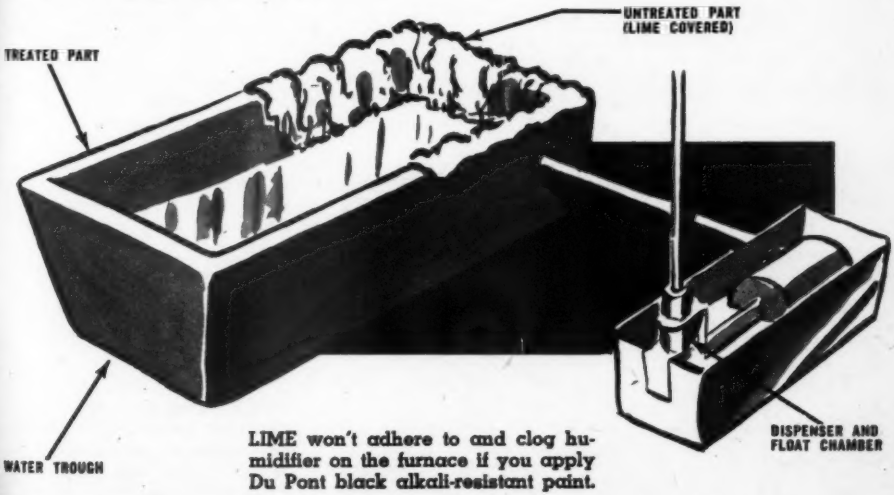
BACK UP plaster patch in plasterboard wall as shown. Cut string and sand when plaster hardens.



MULTI-COLOR paint for textured finish is applied in single coat with spray gun.

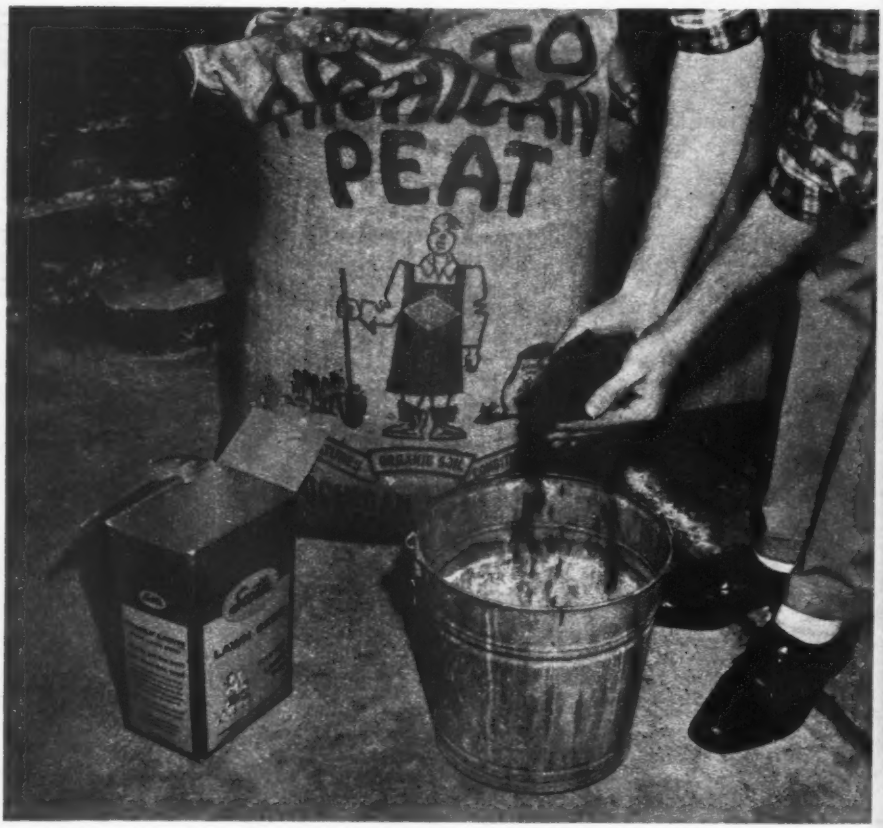
TO APPLY, use spray attachment which can be hooked up to exhaust end of vacuum.

Roxatone Corp., 70 Woolsey St., Irvington, N. J.



LIME won't adhere to and clog humidifier on the furnace if you apply Du Pont black alkali-resistant paint.

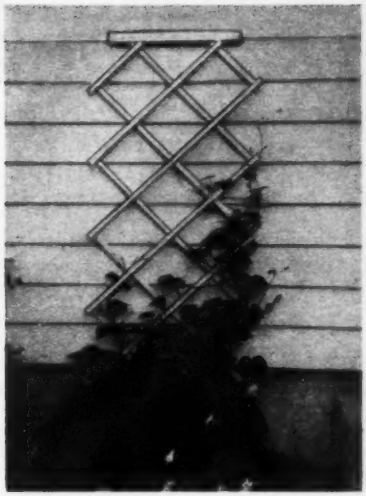
GARDEN TIPS



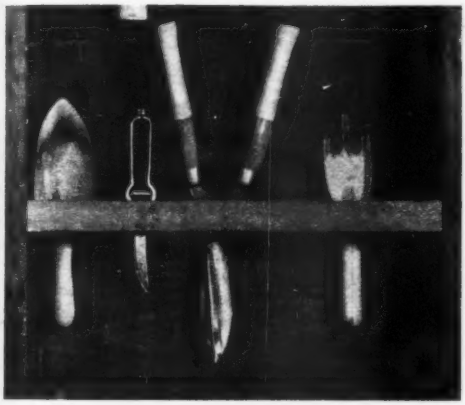
BARE SPOTS on the lawn can be patched by mixing a handful of grass seed to four parts of peat moss. The peat moss holds moisture, helping seed to germinate and its dark color warns folks not to step on freshly seeded areas.

STICKS from ice cream pops serve as plant or tree markers. Type on paper, glue it to stick and coat with varnish. Wire goes through end.

RACK for garden hose can be mounted on wall or garage door. Each part is three blocks of ¾x2-in. wood, one twice as long as the others.



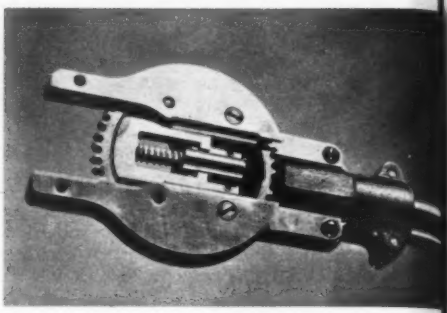
FOLDING GATE, once used to keep a baby from wandering out of an area, makes a fine trellis when nailed to the side of a house as shown above.



GARDENING IMPLEMENTS (left) can be stored conveniently on your garage wall by nailing cleats between the exposed studs with space behind.

WEAR SPIKES to aerate your lawn while you do other chores (below, left). Track spikes are longer than golf spikes (center) so use them in the sockets of golf shoes (right). Track spikes which will fit golf shoes are available from F. C. Phillips, Stoughton, Mass.

New Garden Products

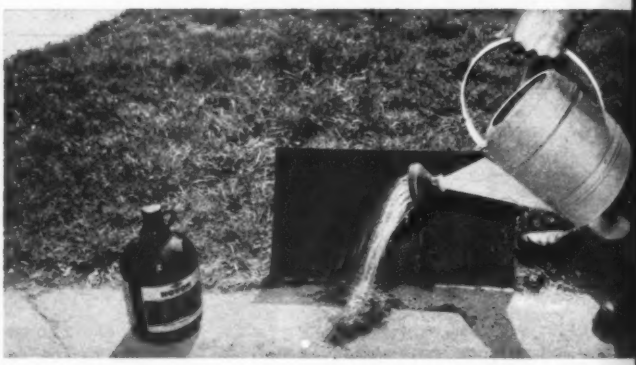


ELECTRIC PRUNER cuts limbs and branches up to 1¾-in. dia. with a sawing action, weighs 6½ lbs., runs on house current or operates from gas-driven generator; $139.50.

Homelite, Port Chester, N. Y.

HOSE NOZZLE of plastic is leakproof, adjusts from fine spray to heavy stream.

Vichek Tool Co., 3000 E. 87th St., Cleveland 4, Ohio



NOVON kills outcroppings of unwanted grass and weeds. The chemical, which is diluted with water, is non-selective, so adjoining areas to be retained should be shielded as shown.

The Dow Chemical Co., Midland, Michigan

EVEREADY name is now on pest killers sold in squeeze bottles and aerosol cans.

National Carbon Co., 30 E. 42nd St., N. Y. 17

LAWN TINT restores green color to brown grass. It is mixed with water and sprayed.

Luminall Paints, Chicago 9, Ill.

Flowerama, a flower garden in mat form, is made by Horticulture, 303 Fifth Ave., N. Y. C. 16 . . . A pound of a selective crab grass killer, called Crab-E-Rad will treat 1,000 square feet of lawn. It is made by Halco Chemical Co., of Kenilworth, N. J. . . . Just like coffee, grass seed is now being sold in metal containers by Associated Seed Growers of Cambridge, N. J., and in foil-lined cartons by the Burpee Co. of Philadelphia. . . . A new ingredient incorporated in a mirror finish plastic garden hose by Gering Products, Inc. of Kenilworth, N. J., is said to give the hose three times longer life than before. It is especially designed to resist sun and exposure damage. . . . Aluminum write-on tags for identifying plants are available from the Merchant & Evans Co., 2035 Washington Ave., Philadelphia 46. A dollar will get you 100. . . . Roots grow right through the walls of flower pots made of pressed peat. They are ideal for transplanting as the young plant can be left right in the pot. M. Schiller, 180 No. Wacker Dr., Chicago 6, sells them, 100 for $2.50.

LAWN RAKE has spring action for a shock-proof sweep; $3.15. Shrubbery rake is $1.65.

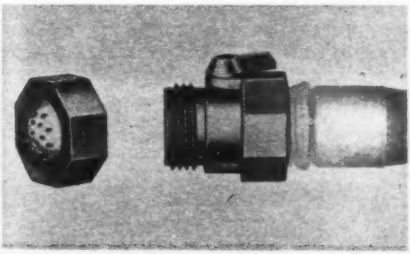
Stanley Tools, New Britain, Conn.

COMBINED table and grill is 20 inches high; you can cook while seated; $19.95.

Arvin Industries, Inc., Columbus, Ind.

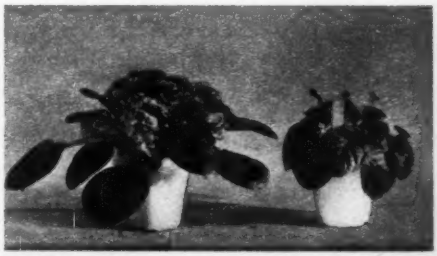
POWER SCYTHE cuts anywhere you can reach, has self-contained gasoline engine; $139.50.

Comet Industries, 801 Elm Place, Richmond, Ind.



QUARTER-TURN shut-off valve connects between hose couplings; has head for spray.

Specialty Mfg. Co., 2356 University Ave., St. Paul 14, Minn.



GIBREL speeds plant growth. At left a treated plant and at right untreated one.

Merck & Co., Inc., Rahway, N. J.

THE THIRD WIRE

Read this article carefully. The information in it may very well save your life.

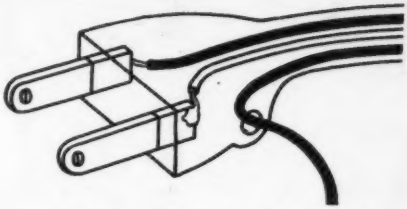
By Robert Hertzberg

SOMETHING has been added to electric appliance and tool line cords that will save hundreds of men, women and children from shock and possible electrocution every year: a *third* wire. This wire carries no current but acts to "ground" an electrical appliance or power tool when it becomes faulty. As a

STRIKING, DRAMATIC proof that you can light a lamp (or get a shock) with only a single wire. Only one wire was inserted into the receptacle. Other touches the faucet to complete circuit! Note: OPERATOR IS HOLDING THE CORD AT THE INSULATED AREA.

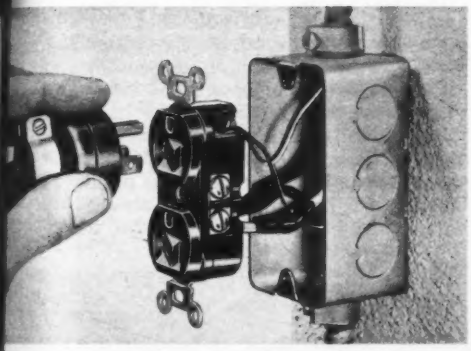
safety measure it has been long overdue.

To understand how the third wire functions you must know that one side of most house power circuits is grounded; that is, it makes firm electrical contact with the actual ground. In urban areas, water pipes represent the most effective and convenient ground because long stretches of them are buried in the earth. In suburban and farm locations, the connection is usually a large copper spike or rod driven into the ground. The purpose of this grounding is to offer an easy, low-resistance discharge path for lightning charges that build up on the long exposed wires carrying electrical energy from generating stations. In practice it has proved very effective.

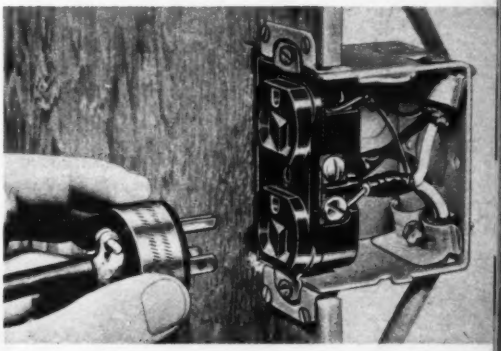


PIGTAIL GROUND. Since 1955 it is illegal to manufacture equipment with such a ground.

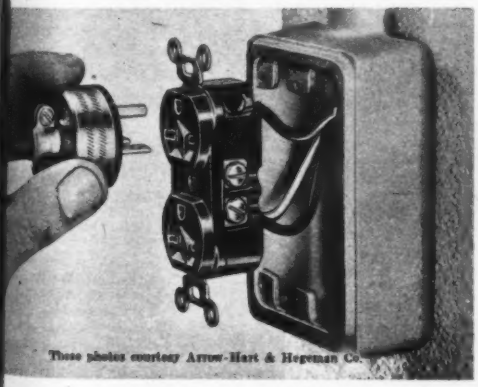
Here are a few facts you should know about the electrical wiring in your home. In the ordinary two-wire system you will notice that one of the wires is black, the other is white. The black wire is the "hot" line and the white is the



GROUNDING in a metal box with BX cable.

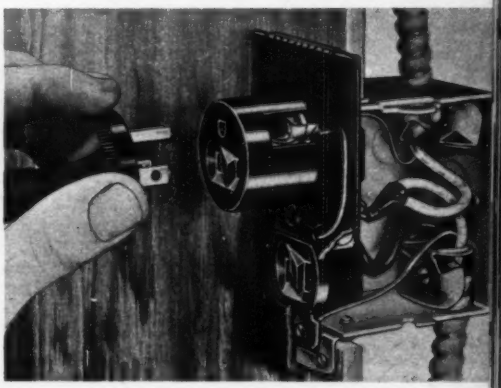


GROUNDING, metal box, non-metallic cable.



These photos courtesy Arrow-Hart & Hegeman Co.

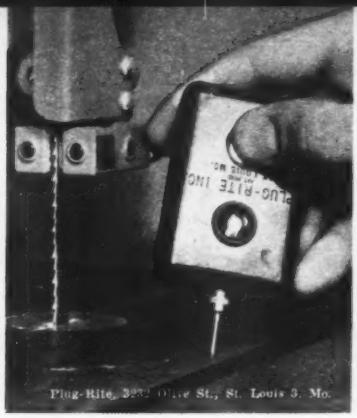
GROUNDING in metal box for conduit use.



GROUNDING by means of an adapter plug.

GREEN WIRES (blue in reproduction) show grounding circuit.

NEON TESTER determines hot side of line.

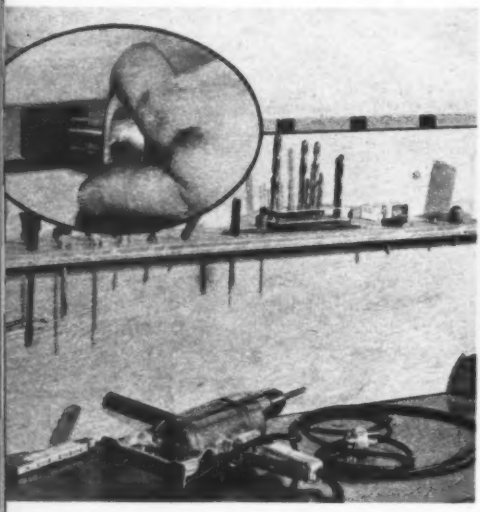


GLOWING NEON means that this saw is improperly grounded.

HOUSE GROUND is connected to cold water pipe; keep tight.

return or the ground end of the circuit. (In certain cases a white wire may become a hot line, as for example when a switch is wired into a circuit. When this occurs the white wire should be painted black at the terminal point to indicate that it is a hot line.)

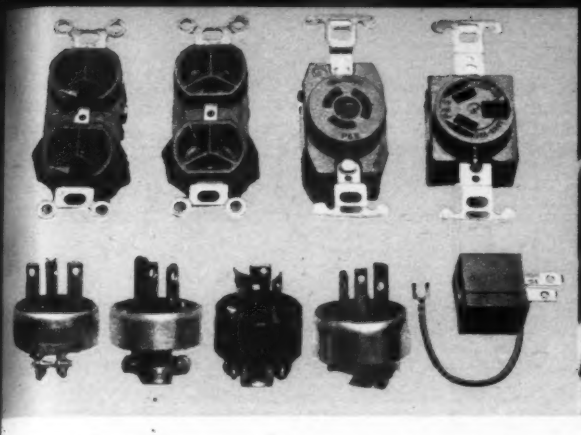
When doing any wiring work the black wire should always be connected to the "black" or brass binding post in a receptacle or outlet, while the white ground return wire should always go to the "white" or nickel-plated post. Furthermore, if you look carefully at any wall outlet you will note that one slot is wider than the other. The wider slot is the return or ground connection and the narrower one is the hot side. The theory being that it should be more difficult to gain entrance to the hot side and so it is made narrower. Terminal plugs (caps) are not similarly polarized and so it is possible to insert a plug into an outlet in two ways. With a three-



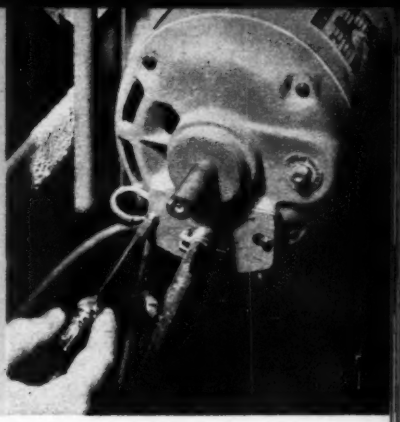
HEAVY DUTY plug-in strip for grounding type plugs has an outlet every six inches.

BROILER, because of proximity to sink should be grounded. Use a 3-wire switch.

National Electric Prods. Corp.,
Gateway Center, Pittsburgh 22, Pa.



NEW RECEPTACLES, plugs and an adapter for use with tools and appliances using the three-wire system.



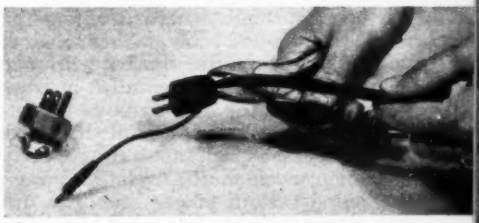
THIRD WIRE for grounding can be attached to any convenient bolt.

wire grounding-type plug, there is only one way to insert the plug into the outlet—the right way.

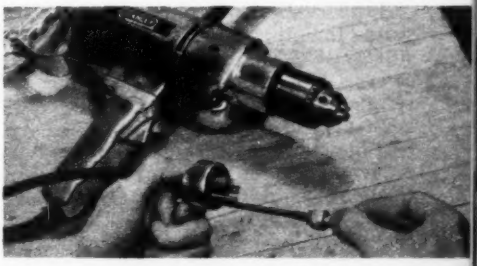
In buildings, electric wiring is generally enclosed in flexible BX or thin-wall rigid conduit or metal tubing. This is grounded to the same ground to which the white wire inside the tubing is connected. The other wire has black insulation and is called the "hot" leg of the line to distinguish it from the grounded leg, which is very much part of the same circuit. Under normal circumstances the grounded BX or conduit does not carry current, even though it is connected to the grounded white wire.

The current path is from the hot wire to one contact in the wall receptacle, one prong of the line plug, one wire of the line cord, one end of the appliance, the other end of the appliance, the other wire of the line cord, the second prong of the plug, the second contact in the receptacle, and out through the ground wire of the power line. The metal cover of the outlet box makes contact with the box through the grounded metal tubing, the BX cable, or in the case of non-metallic sheathing with the bare ground wire that runs between the insulated wires. However, since the contacts of the receptacle are thoroughly insulated, the cover, the BX cable and the conduit (tubing), handle no current and are therefore considered "cold."

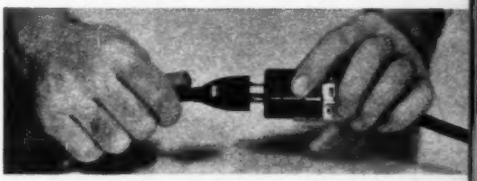
As long as an appliance is in good condition and is used with reasonable care, it is perfectly safe. Unfortunately



TO RE-WIRE a pre-1955 power tool for use with a grounding plug, cut off the pigtail.



STRIP the three wires. Green to ground, white to silver contact, black to brass.



USE A UL APPROVED extension cord with a 3-wire plug, receptacle at each end.

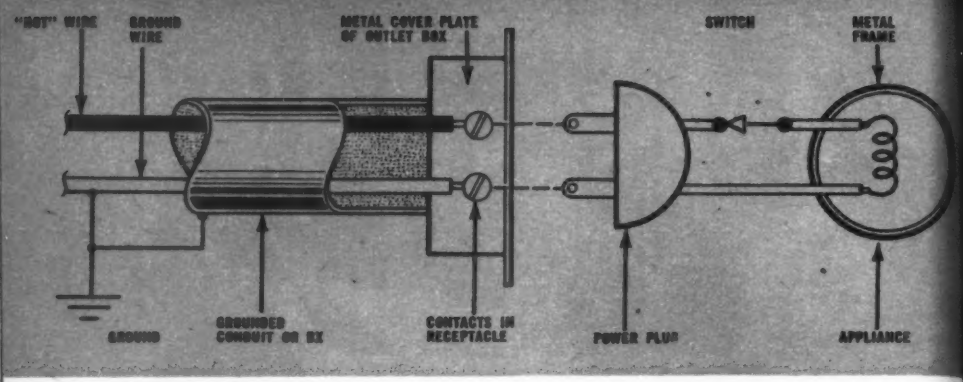


Fig. 1. Normal two-wire circuit with everything in order.

insulation does wear and wires do break. Examine the very common case illustrated in Figure 2. The line cord case has worn through where it enters the metal frame and now makes contact with it. Holding the device with one hand, the user accidentally brushes against a water or steam pipe or a heating duct. Trace out the circuit: hot wire, top side of line cord, metal frame, body of person, accidental ground and back to ground side of power line. The unsuspecting victim is subjected to the full line voltage! *Note that the switch controlling the appliance doesn't even have to be on.*

Suppose the line plug had been inserted the other way. Would the danger still exist? Figure 3 says that the answer is No. The frame is not "hot" in relation to ground because *it is already connected to the ground.*

It now becomes rather obvious to ask, "If grounding the frame makes it "cold," why not ground it deliberately?" That's precisely what the welcome third wire in the new line cords does for humanity.

GE MAKES extra long 3-wire cord with locking plug for use with grass-cutting tools.

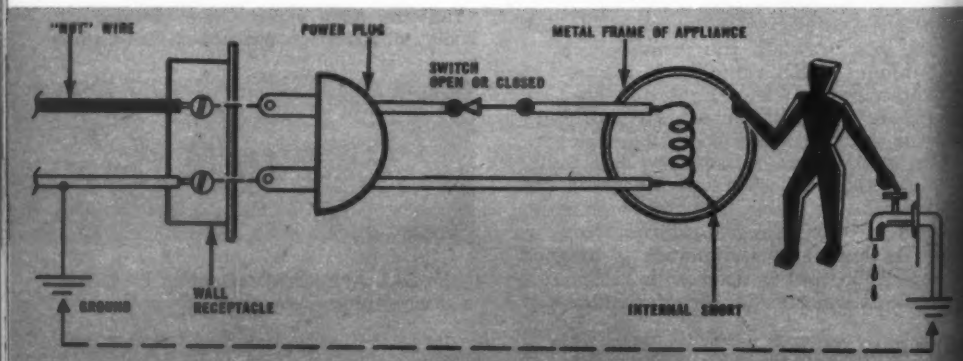


Fig. 3. With line plug in this position, short blows fuse. No shock hazard.

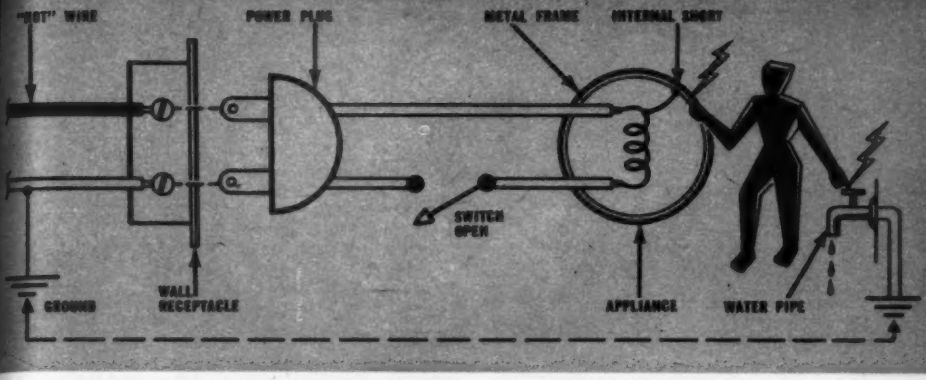


Fig. 2. With a frayed hot line, shock is possible with switch open or closed.

POWER TOOLS manufactured after 1955 are equipped with grounding-type 3-wire cap.

Of course, a third wire requires a third prong in the plug and a third contact in the receptacle. New accessories incorporating these features are now in full production and are available everywhere in hardware and electrical supply stores.

Figure 4 shows that the circuit conditions for the three-wire hook-up are not quite the same as in Figure 3. The grounded third wire is open-ended and does not carry current *until trouble occurs in the appliance.* Let's assume that the hot wire touches the frame. This is a dead short-circuit to the grounded frame, which is now connected to the ground of the power system and the line fuse or circuit breaker simply bangs open. If the return or white wire touches the frame, nothing happens, because it is grounded anyway.

An ungrounded appliance in good condition can cause wicked shocks if water leaks into it somehow and creates a partial circuit between the hot leg of the line and the frame. This is why grounding is [*Continued on page* 142]

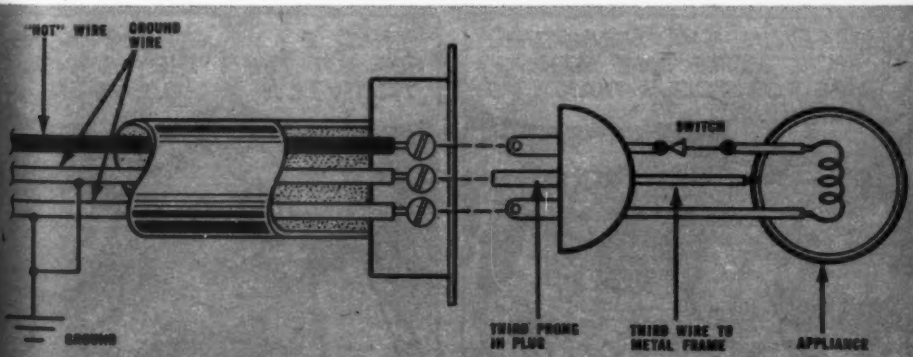
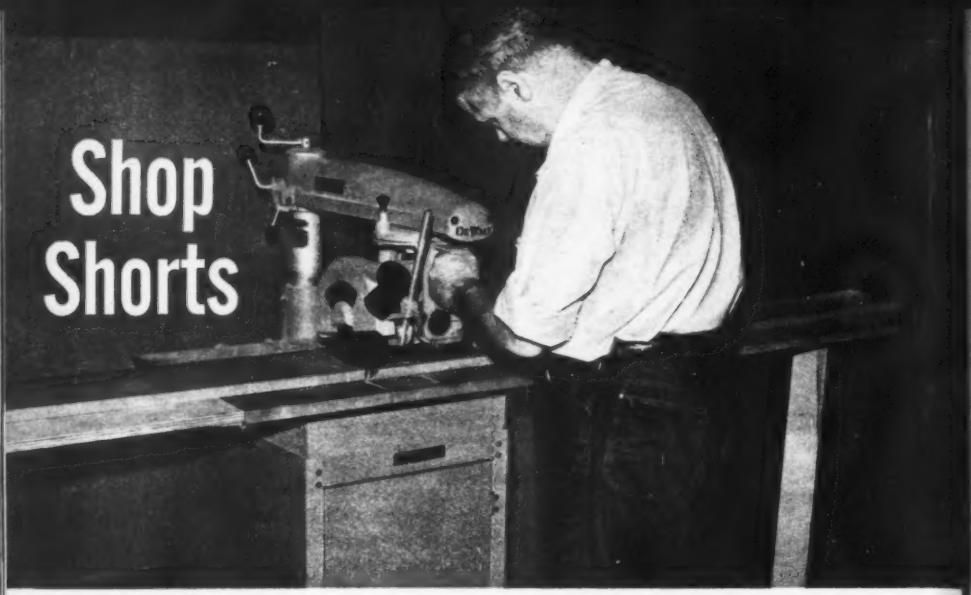


Fig. 4. Full protection with third wire grounding the frame, motor or appliance.

Shop Shorts

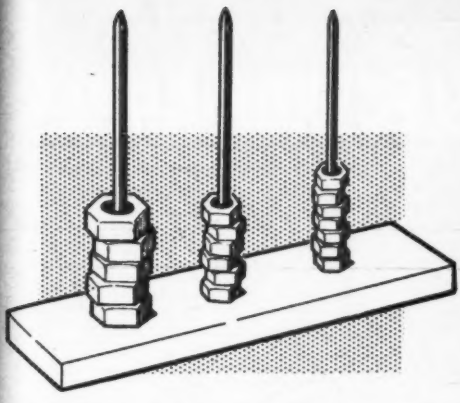


HINGED, drop-leaf extensions on each side of radial-arm saw table extend work area.

SQUEEZE plastic aluminum into loose screw hole; when dry, it will grip screw securely.

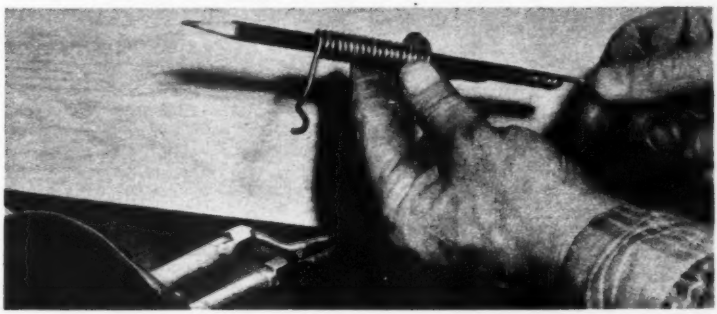
PUTTY KNIFE slipped under hammer head saves wood when ripping nails.

FREDDIE FUMBLES



NAILS driven through a length of scrap wood make handy spindles for storing nuts.

IN AN EMERGENCY, replace broken cap screw with machine screw and nut as shown.

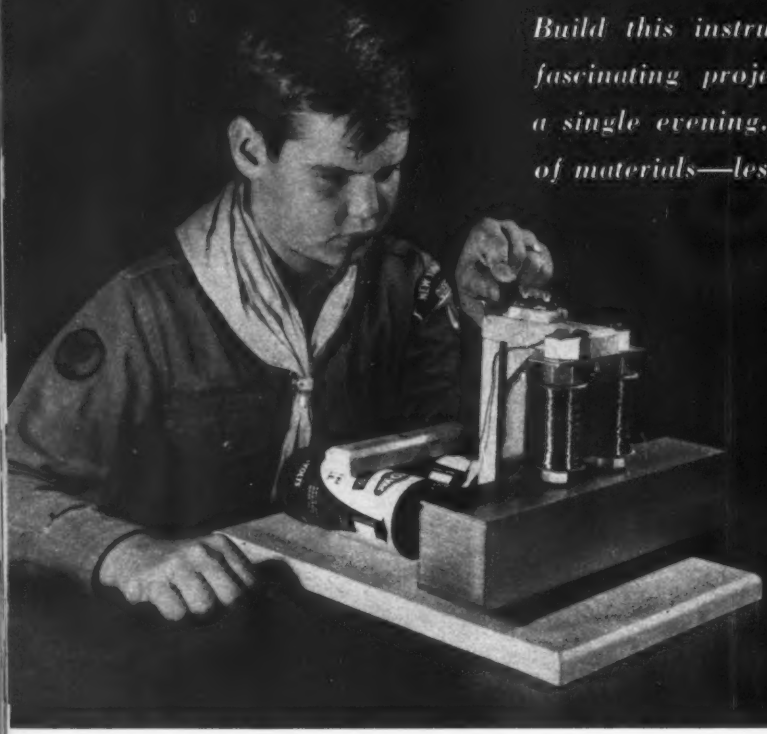


WORK WITH A NEAT small coil of solder instead of from a bulky spool by wrapping the solder around a pencil and then sliding it off as shown.

Send Freddie Fumbles your idea of a good short-cut, time-saver or safety device in your work, whether it be in the home, shop, office or farm. Each tip accepted will be paid for at the rate of $10. Naturally we cannot acknowledge or return the ones we cannot use. However all will be carefully read and evaluated. (Those which we can use in other departments of MI will be paid for at our regular rates.) Please send in your ideas on a post card only. Address to Freddie Fumbles, *Mechanix Illustrated*, 67 W. 44th St., New York 36, N. Y.

FUN WITH SCIENCE

EXPERIMENTAL ELECTROMAGNET



Build this instructive and fascinating project during a single evening. The cost of materials—less than $3.

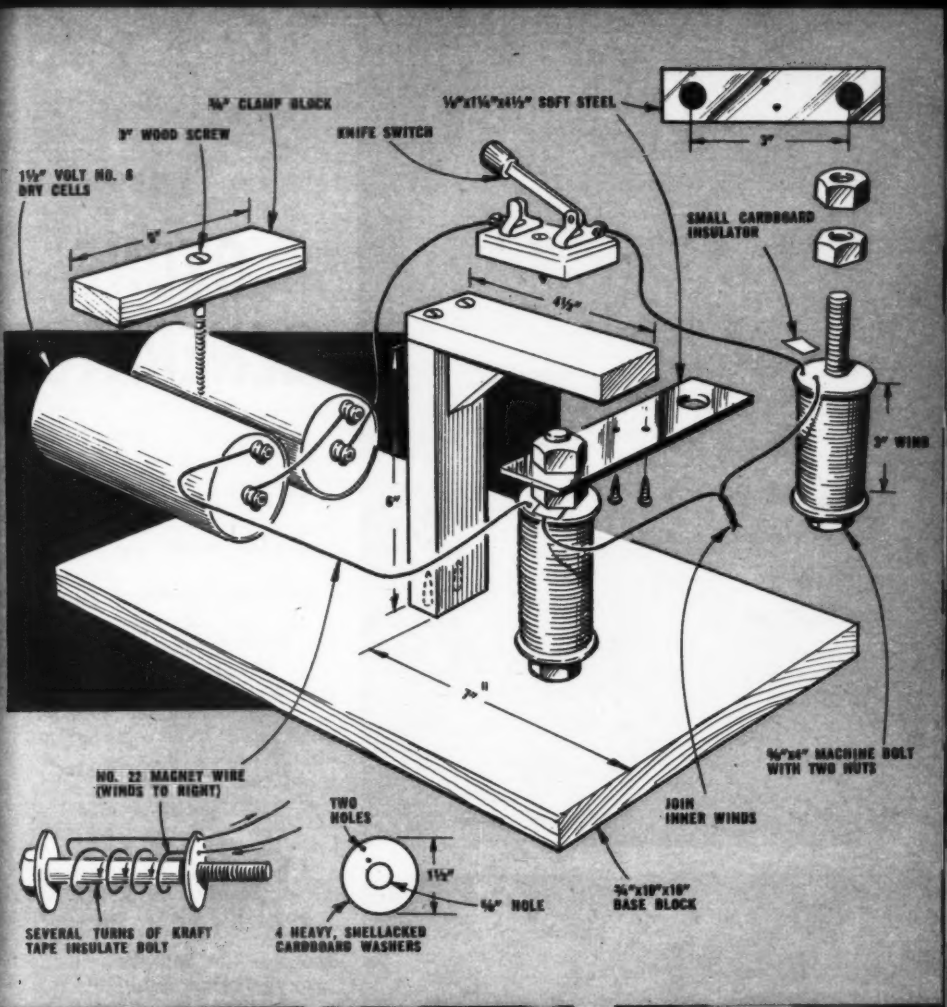
AN electromagnet is a simple yet powerful device consisting of a coil of wire wound around a soft iron core. When current is passed through the coil, the core becomes magnetic.

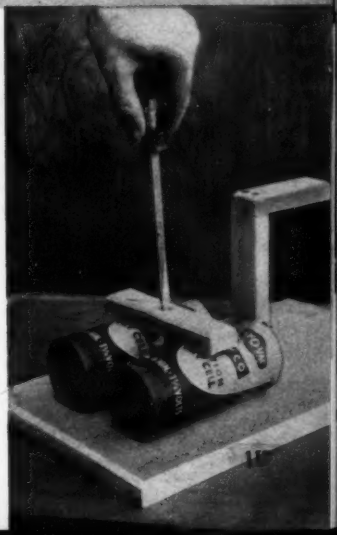
Use machine bolts for the cores. Soften these by placing them in the flame of a gas range until they turn a cherry red color; let them cool slowly.

Next, cut out four cardboard washers. Drill two small holes (see diagram, right) in two of these for the wire leads. Shellac the washers and slip them onto the bolts.

Now pass about six inches of No. 22 magnet wire (one-pound spool) through the inside hole of the upper washer and commence winding. Keep each turn close to the previous one so that more turns will be possible. Wind to within ⅛ inch of the outer rim of the washers before passing the end of the wire through the outer hole of the washer. Wind the second coil in same manner. A yoke of soft iron, drilled as shown, connects the bolts. Mount the unit to the baseboard and join the two inside wires.

You can conduct some mighty interesting experi- [*Continued on page* 145]





KRAFT TAPE insulates iron cores from their wire coils.

COILS are wound to the right around both cores.

RIGHT. A long wood screw clamps batteries to the base.

SOCKETS for ballast and ozone lamp are installed in series on base of the ¼-inch-plywood light box.

MI's

OZONE GENERATOR

Odoriferous air,
Be it stale or damp,
Grows fresh and fair
'Round an ozone lamp.

By R. J. Capotosto

OZONE is that clean, fresh scent of outdoor air you smell just after an electric storm. Electricity creates ozone—an activated form of oxygen that dissipates many objectionable odors. On a smaller scale, an ozone generator has the same effect.

The plaque pictured here serves as a wall decoration, night light, air purifier and deodorizer. Air purification is achieved with an ozone-producing lamp which emits ultraviolet rays in a wavelength that garners ozone from atmospheric oxygen.

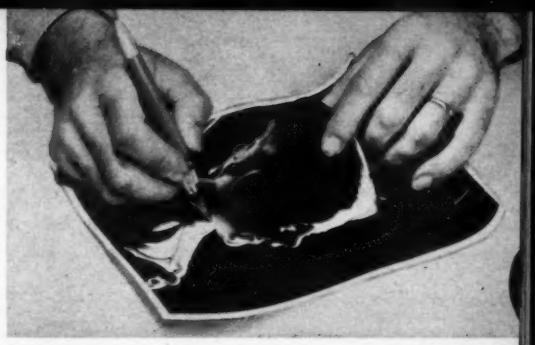
For this project a Sylvania G4S11 ozone-producing lamp was used. *Never look directly at an ozone-producing lamp!* To eliminate any possible injurious effects, the

lamp is concealed in an open-top frame.

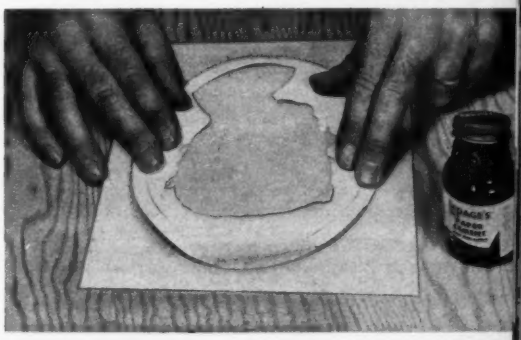
Begin construction by rabbeting the sides and bottom of the light box; then assemble with white glue and brads.

Next, install two standard light-bulb sockets, in series, in the light box. The center socket takes the 40-watt ballast bulb which absorbs excess current that might otherwise shatter the ozone lamp at the right.

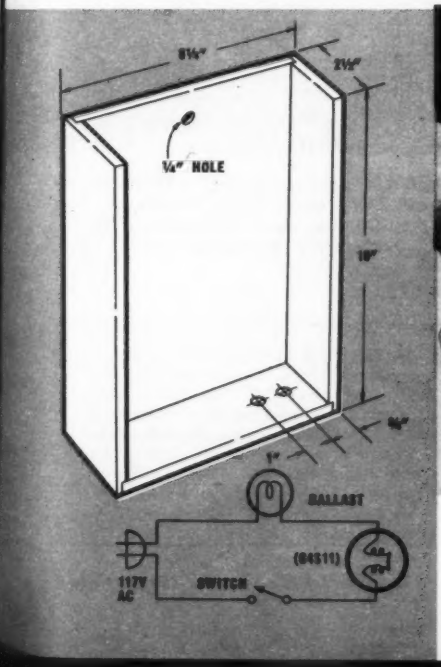
If you would like the plaque to set off a silhouette of your wife or of one of your children, here's how to do it: Cut out a profile photo and save the piece with the facial outline. Back up the profile with a border such as an oval, heart or diamond. Use this border as a mask, rubber cement it to an 8x10-inch piece of opal glass and spray it with flat black enamel. When dry, remove the mask to reveal the silhouette. Now take a standard 8x10-inch picture frame and nail it to the front of the light box. Finally, install a rotating switch, turn on the lamp, then inhale that hale and hearty air. •



SILHOUETTE for the plaque is made from the print's outline after profile has been cut out.



BORDER of profile outline is cut to an oval shape before it's cemented in place on the opal glass.

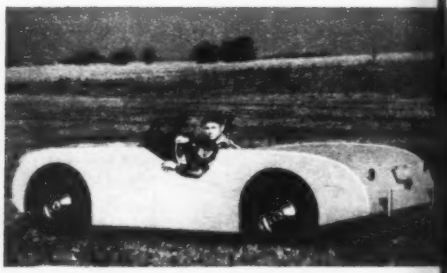


SPRAY LIGHTLY with flat black enamel; when dry, remove mask to reveal silhouette.

Golden Hammer Award Winners

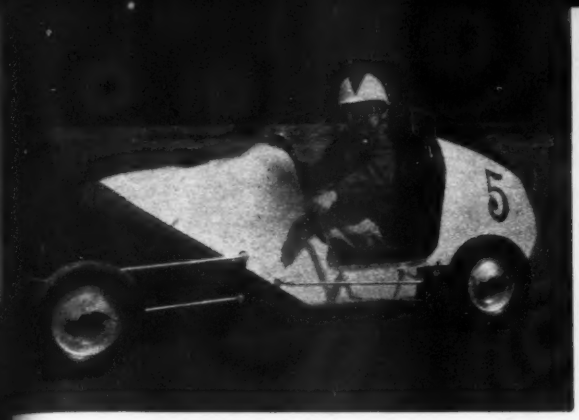
RUNABOUT of Fiberglas-covered mahogany plywood was designed and built by Vecal Lager of Barrington, Ill. The boat hits over 50 mph with Mercury's 60-hp Quicksilver unit.

COCKTAIL CABINET, bookcase and secretary, which were built from a variety of exotic African woods, represent the craftsmanship of W. H. Kitto, Salisbury, Southern Rhodesia.



SPORTS CAR, mounting a 20-ga. sheet-steel body on a Henry J. chassis, hits up to 86 mph. Z. L. Altenburg of Kings, Ill., built it for the small sum of $260.

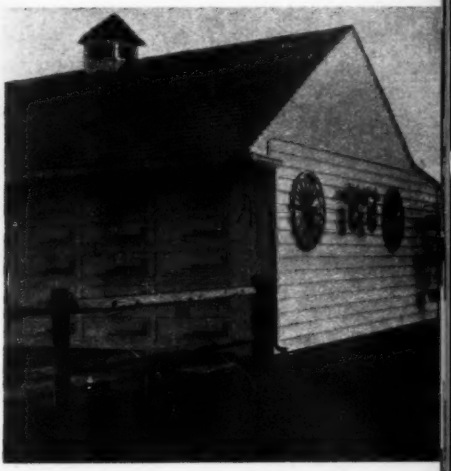
The following craftsmen have been awarded GOLDEN HAMMER TIE BARS for their projects: Miles V. Wolbowe, St. Charles, Ill.; Leonard and Willard Haeber, Tivoli, Tex.; Lonnie Harvey, Willard, Ohio; Charles M. Aamonson, Milltown, Wis.; H. Schultz, Penticton, B. C., Can.; W. H. Sears, Mason City, Iowa; Richard Plaisted, Eliot, Me.; John L. Hrebenar, Binghamton, N. Y.; Chester J. Minkle, Brookline, Mass.; Anthony J. Andreozzi, Barrington, R. I.; George E. Young, Wichita, Kan.; Paul Witt, Melrose Park, Ill.; Roy F. Peck, Oshawa, Ont., Can.; Roland E. Speckman, Mtn. Home, Idaho; Geert Vos, Vineland Station, Ont., Can.; Jimmie Miller, Albany, Ga.; Albert C. Manke, Racine, Wis.; Henning Dixner, Copenhagen, Denmark; Jim H. Corbett, Huntsville, Tex.; Walter Pavek, Jr., Faribault, Minn.; R. G. Habermann, Passaic, N. J.; John Turevich, [Continued on page 143]



MIDGET RACER, powered by a 2¾-hp Briggs & Stratton engine and geared to a maximum 7 mph, is the pride of the builder's young son and daughter. Their Dad is Edward Fisher of Staten Island, N. Y.

MI TELESCOPE pivots on transit tripod. Builder Joseph Kertesz of Toledo, Ohio, describes telescope's lens power as "just magnificent."

"PEACE" is the name of this marble statue by Joe Ronci, Youngstown, Ohio, who never had a sculpting lesson. Two boys represent U. S. and Russia with Peace between them. Amen, Joe.



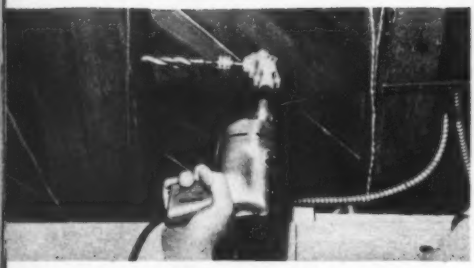
CONVERSION JOB changed a run-down shed into this modern garage. Renovator was Arthur Ader, cattle man and farmer out in the fertile lands of Rolfe, Iowa.

Each craftsman whose project is shown receives a 24-karat gold-plated Hammer and a Workbench Award Certificate. Runners-up will be sent a beautiful gold-plated Golden Hammer Tie Bar or MI's Certificate of Merit. So send us some *black-and-white photos, with negatives,* and a full description of your latest project. Photos of your workshop are also eligible. Send all entries, with return postage, to MECHANIX ILLUSTRATED Golden Hammer Awards, 67 West 44th St., New York 36, N. Y. Entrants are advised that MECHANIX ILLUSTRATED cannot accept responsibility for customs charges, duties, taxes, etc., levied against Golden Hammer and Golden Hammer Tie Bar winners outside the United States.

MI's HARDWARE STORE

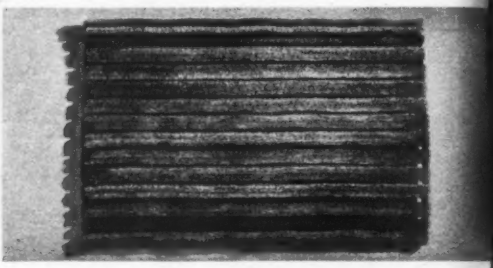
ARISTOCOM, combination radio and intercom has an automatic switch which cuts off radio at "talk" and "listen." With matching speaker, sells at $33.95.

Aristocom Corp, 5720 West Armitage Ave., Chicago 39



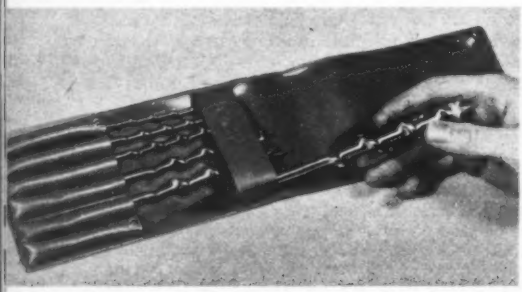
TWO-SPEED angle-drive attachment for quarter-inch drill halves speed for angle drilling and doubles it for sanding. $4.95.

Arrow Metal Prod. Co., 421 W. 203 St., N. Y. C. 34



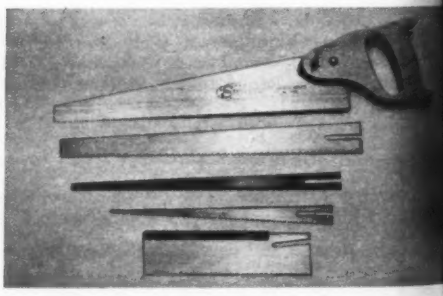
COLORFUL chenille door mats have napped surfaces integrated with tough tire fabrics, are available in a variety of sizes.

Quality Prod. Co., 135 W. 157 St., Gardena, Calif.



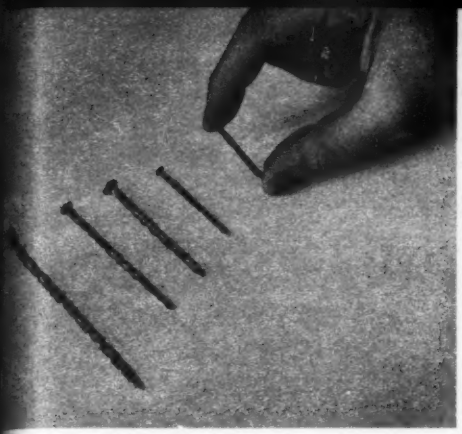
SET OF FIVE auger bits (¼-in. to ¾-in.) from W. Germany are top-grade drop-forged steel-tempered, ground and highly polished. $6.45.

Handcraft Creations, Dept. MI-1, P.O. Box 31, Ocean Grove, N. J.



ANOTHER FIVE-PIECE SET, saw blades, has blades for hand saw, pruning saw, compass saw, hack saw, miter saw. $2.00.

House of DuBois, 550 Fifth Ave., N. Y. C. 36

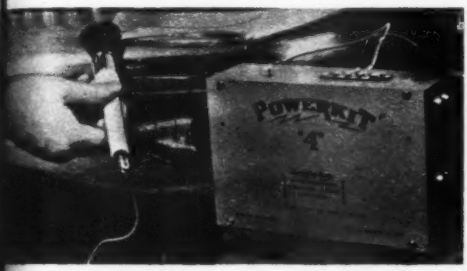


SPIRAL NAILS, have 50% to 200% greater holding power than straight-shank nails: complete line now available for builders.

Jones & Laughlin Steel Corp., 3 Gateway Cntr., Pittsburgh 30, Pa.

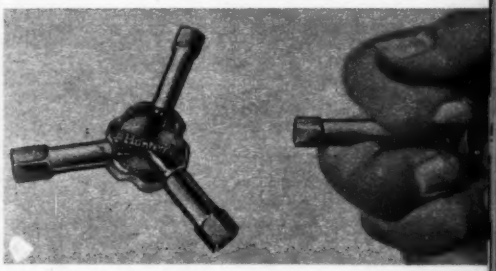
NEW SPRING FASTENERS secure screens, storm windows in place by pressure. Fixed over window frame, they serve as hangers.

Ludwig Mfg. Co., 1405 16th St., Racine, Wis.



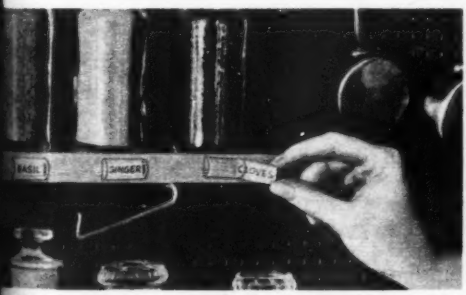
AUTO CHROME can be replated with this electroplating outfit that gets its current from 110 V. outlet or car battery; price $14.95.

Empire Merchandising Co., 4 N. 3rd Ave., Mt. Vernon, N. Y.



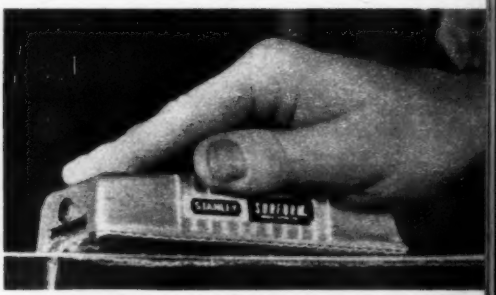
ATOM nut driver combines Nos. 8, 10 and 12 socket sizes in one tool. The two unused shanks provide excellent hand leverage.

Hunter Tool, P.O. Box 564, Whittier, Calif.



HOL-DEX labels adhere to all surfaces, come in four sizes. Cardboard labels slip into plastic holders. Six-inch strip: 30c.

Cel-U-Dex Corp., 1175 Anderson Ave., N. Y. C. 52

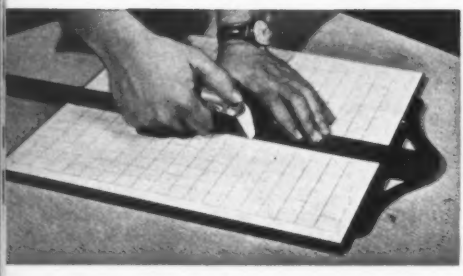


SURFORM, a new pocket-size, one-hand forming tool, trims, chamfers and forms all woods and softer metals. Price: $1.49.

The Stanley Works, 111 Elm St., New Britain, Conn.

PLAY GO ISHI

Oriental ticktacktoe can get to be a habit. Here's how to play it and how to make a beautiful board to play on.



SCORE AWL and T-square make easy work of scoring plastic—but use pencil first.

ANYONE who can play ticktacktoe can play *go ishi* and have hours and hours of fun with the grownup oriental version of the old schoolroom favorite. Some *go ishi* fans have made a fixture of their favorite game, keeping an elegant *go* board and some *ishi* (markers) on a coffee table, as a friendly challenge to all comers. You can buy a *go* board from a Japanese curio shop. But as a craftsman you may enjoy making and having the MI *go* board, which is elegant, durable, washable and pleasant to touch and to play on. The first thing,

of course, is to play the game, which is easy to learn.

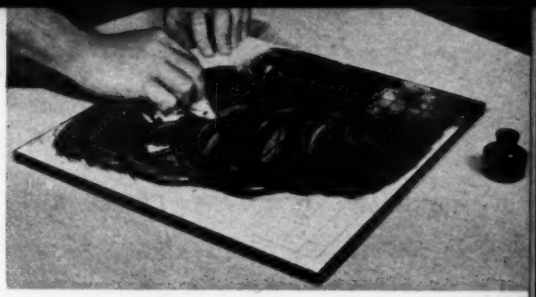
Go ishi is played on a grid of 19 vertical by 19 horizontal lines—the same board that the entirely different game of *go* is played on. Each player has a large supply of *ishi*—which you can buy. If you want to play right now you can use two kinds of beans or buttons or whatever you can find for markers. Fine games have been played with popcorn and rice, Puffed Rice and Cheerios, etc.

To open play, one of the two players puts a marker on an *intersection* of lines on the board—*not in a square.* The second player places one of his markers on another intersection. Any unoccupied point is open to the player. The object is to lay five in a row—vertically, horizontally or diagonally—in spite of one's opponent. The player who succeeds wins.

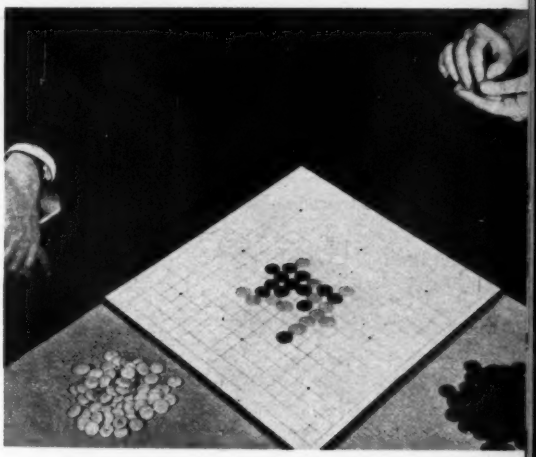
A rule you may adopt later, one in general use in Japan, forbids putting a marker where it will form at one blow two open-ended rows of three—an unbeatable combination. The rule is used because top players, given the first move, can always force double open threes. *Any other combination is legal.*

The handsome board being used by our players (the girl won this game) is made of half-inch fir plywood. A square of Formica is glued to each side of the board to prevent warping and also provide an extra surface for chess or checkers. For a decorative touch, a half-inch strip of black Formica is glued around the edges.

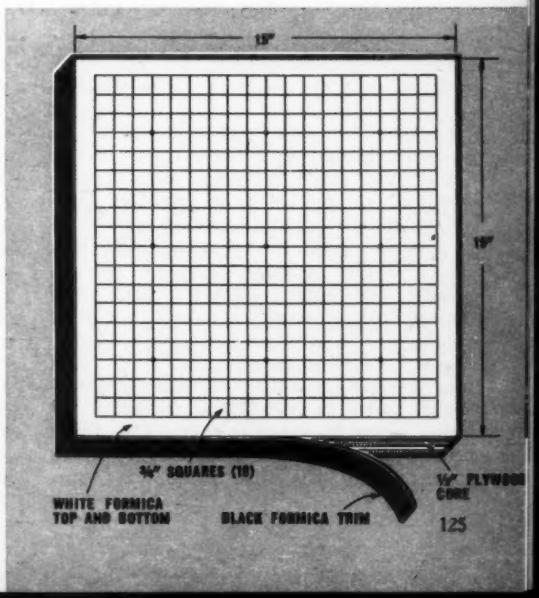
To make the playing surface, draw the squares with a pencil and then use a scriber and steel straightedge to score the lines into the Formica. A sharp tool such as an awl will work nicely. Smear India ink over the scribed lines and wipe it off with India ink cleaner. (Or use black paint and wipe it off with turps.) The ink or paint will remain in the scored lines, making a neat and attractive board. •



SMEAR INDIA INK over entire surface of scored board, then wipe off with solvent.



FINISHED board—handsome enough to be left out as a standing challenge to visitors.



CAR CARE

Your '59 Chevy

By Frederick C. Russell
Member, Society of Automotive Engineers

SURE—see the U.S.A. in your new Chevrolet. But before you start out be sure you're posted on the car's special needs so that you'll be able to get the most out of it. Learning about the new Chevy—or any of the 1959 cars—require that you junk some of the rules you have followed with former models, no matter how effective they may have been at the time.

Under normal driving conditions the new Chevy engines require an oil change no oftener than every 4,000 miles—after the first change has been made at the 1,000-mile mark. Under adverse driving conditions, or for stop-and-go use in winter, a change every 2,000 miles is considered sufficient by the factory's engineers. Oil filter changes are recommended every 4,000 miles, after the first 5,000. An important item in connection with the Turboglide transmission is lubricating the control shaft—located between the transmission and the frame—with waterproof grease every 1,000 miles.

Keep an eye on the engine's oil level during the break-in period. Piston rings have not yet seated and sealed as they will later. When the engine needs additions to the oil supply, use SAE 10 grade oil. Various speeds are recommended during the break-in period and, of course, no pokey driving. However, keep your Chevy under 60 mph during the "shakedown cruise."

Failure to observe certain lubricating rules can cause a chattering noise in the Positraction rear axle. This may occur if the wrong lube is used in this non-slip-type differential. Use only GM No. 3758790 or No. 3758971 lube for

IF YOUR Chevy takes a list to port or starboard, check air suspension valves.

REAR-END JACKING must be done carefully to avoid damaging the new rear-end tie rod.

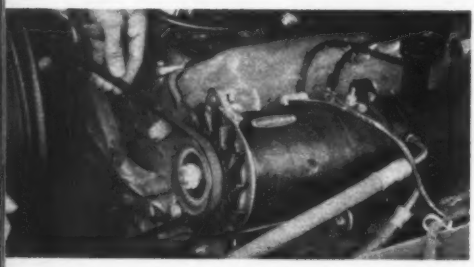
these axles—available from your dealer.

An interesting suggestion by Chevy is a throwback to an idea many drivers have used with conventional differentials over the years: should one rear wheel be on an excessively slippery surface while the other has good traction, apply the parking brake lightly (three or four notches). This will add enough resistance to the spinning wheel to cause the axle to lock up and to start the car moving. Chevrolet's parking brake is applied by pressing a small pedal with your left foot. There's a handle to pull up to release the brake. This handle can be lifted by hand or by your left foot.

While it is considered a convenience in driving to have the brake pedal low so that the right foot can be easily switched from the accelerator pedal to

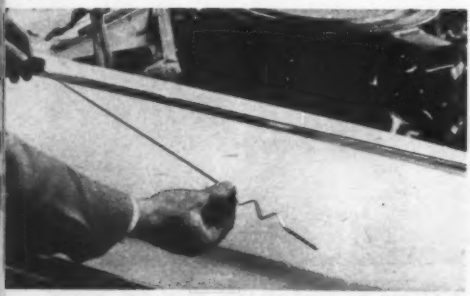
LIFTING BLOCKS of jack must not contact valance panels below the front-end bumper.

WHEELS of new Chevys have large cutouts which provide greater brake-drum cooling.



FAN BELT under 15-lb. pressure should deflect ¾-in. on the 263 cu. in. V8 engine.

CHEVY'S new fabric universal joint in steering gear shaft needs no lubrication.

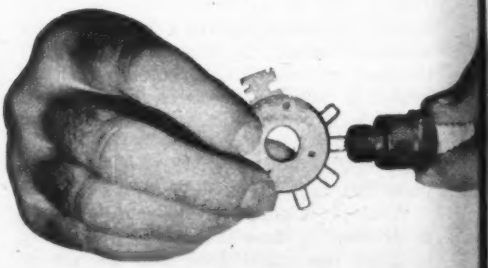


REGULARLY check oil level in Turboglide transmission; add Type A oil as needed.

the brake pedal, and vice versa, some owners of 1959 Chevrolets may jump to the conclusion that the pedal should be higher on any model with the new Bendix Master-Vac power system. This new booster fits in piggy-back fashion to the hydraulic master cylinder and requires only two external line connections. One is the vacuum line to the engine's intake manifold passing through a vacuum reservoir; the other is the hydraulic line connecting with the hydraulic brake system. The Moraine diaphragm power brake used with some of the 1959 Chevy models differs considerably from previous installations but it is also a piggy-back design. Make sure which of the two systems your car carries in case you need service where Chevrolet mechanics are not available.

Brake linings on both front and rear wheels of the '59 Chevy have been widened. Incidentally, should the brakes "grab" in a sort of on-and-off action, the cause may be a sticking air valve, or perhaps the piston of the master cylinder is binding in the power piston guide.

More about brakes. One owner, who has piled up a sizeable mileage since last autumn, started worrying when he found the brake pedal going too far to the floor. To him this indicated something amiss in the power braking system. However, he soon found that the brake shoes merely needed adjustment. Often, though—especially where there is power assistance—a feeling of hard pedal with your Chovrolet is due to vacuum failure. So check occasionally for loose vacuum fittings, hosing or pipes. A collapsed vacuum hose will cause such failure; so will a leak in the



SPARK PLUG gaps are set at .035 inches for all of the Chevrolet engines this year.

reserve tank, so watch for these too.

If you have some of the new testing equipment and are especially interested in trying out your neon timing light, make a note that when tune-up time comes around, the Hi-Thrift, six-cylinder engine's ignition should be set at top dead center, whereas all the V8's, including those equipped with Ramjet fuel injection, should be set at 4° ahead of top dead center. Note also that while you may want to check the breaker arm spring tension for the Six (it should range between 19 and 23 ounces), you need not consider the tension for the arms used in the other engines because these are preset. Spark plug gap for all the engines in the 1959 line is set at .035 inches.

One change in the '59 Turboglide transmission should give longer trouble-free service. This is use of multiple disk clutches instead of the previous cones. Both types provide equal holding power but the multiple disk clutch is far ahead in heat-dissipating capacity. Of course, in the Drive position there is no automatic or manual clutch engagement. But when trying to rock out of deep snow by switching the selector lever back and forth between Drive and Reverse, the new clutches are superior.

The new Chevy suspension system now incorporates a single-purpose lateral control bar which improves the car's over-all balance by causing the roll center of the suspension to more nearly coincide with that of the rear axle. This bar looks like a front-end tie rod. The rubber bushings at the three control arms may need a little special rubber lube if squeaks develop. If the car is equipped with air suspension instead of coil springs, be sure to close the manual shut-off valve before the car is lifted on a hoist or when a wheel is jacked up.

A squeaking sound, heard when making a slow turn, may simply be due to vibration of the valve core in the check valve located in the intake port of the leveling valve. Incidentally, the higher the humidity in the area where you use a Chevrolet with air suspension, the more often you need to drain water from the accumulator tank; any excessive amount of water indicates a leak in the system.

Although the acrylic lacquer finish is so tough it [*Continued on page* 134]

SERVICE TIPS

from Detroit

American Motors offers a new 18-volt bulb (No. 1445) with all 1959 cars equipped with automatic transmissions. This is a long-lasting bulb capable of withstanding shock vibrations that occur when operating push buttons and park brake. Also, a section of the instrument panel between push buttons has been eliminated to facilitate removal of the bulb.

Cadillac owners can prevent exhaust gases discoloring the rear bumpers of the '59 models by turning the tail pipe on the end of the exhaust resonator 30° outboard while maintaining a half-inch clearance between tail pipe and frame corner gussets.

Rattles originating in the luggage compartment or rear floor pan area of a '59 Ford may be caused by a lack of sound deadener on the rear floor pan in the fuel tank mounting area. If so, remove the fuel tank and apply a heavy coat of undercoating material to the floor pan; when partially dry, replace fuel tank.

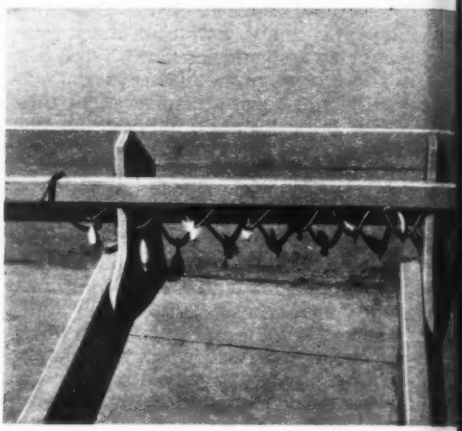
The specified brake pedal free travel for the '59 Edsel is ¼ inch to $\frac{7}{16}$ inch. If the free travel is not within these limits, the brake pedal should be adjusted.

Buick cautions all auto buffs as follows: When working on a car with a Positive Traction differential, never raise one rear wheel and run the engine with the transmission in gear. The driving force to the wheel on the floor will cause the car to move.

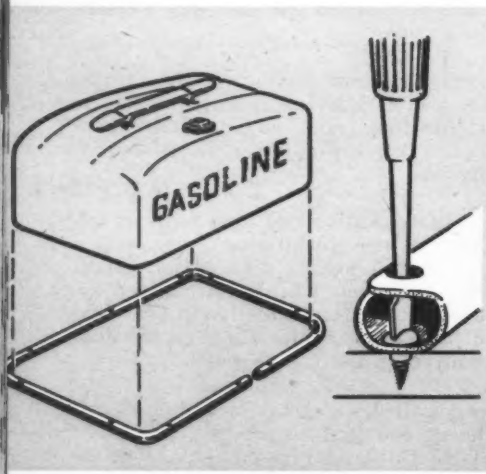
Install shock absorbers and insulators lower end first on the new Mercurys. Tighten the nuts finger tight. Position the upper shock mount on the frame cross-member, install the insulators, washers and nuts and tighten the nuts to 10-13 foot-pounds.

Boating and Fishing Tips

FISH HOOKS can be kept safely in large paper match book—even in your pocket. To use empty book, glue strip of cork inside.



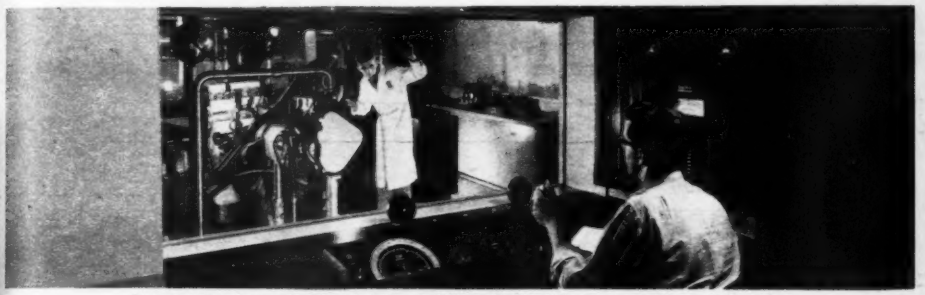
LURE HOLDER in boat is just a length of electrical wire tacked in loops along the underside of sheer clamp or gunwale.



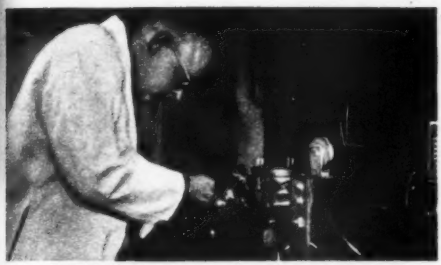
HOSE makes good trap for outboard gasoline tank; wrap it tightly around base of tank and screw it to floorboards as shown.

TAPE wrapped in two bands around roller at rear of trailer forms keel slot, keeps boat from sliding sideways when pulled up.

HOW AMERICA'S NUMBER ONE CARBURETOR SHORTENS EVERY MILE . . . STRETCHES EVERY GALLON!



Engineers using the vast facilities of the General Motors Technical Center, are working on tomorrow's carburetor design today. Such years-ahead planning and research means better performance for you.



At Rochester Products, these carburetors are manufactured under the industry's highest standards of quality control, assuring dependability and longer, trouble-free service.

Thirty General Motors Training Centers across the nation offer the finest training available. Mechanics are taught modern, time-saving methods of servicing carburetors.

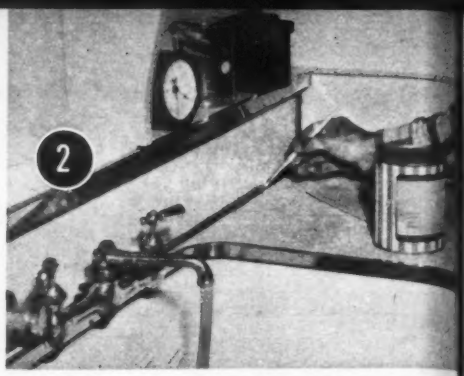
Rochester-GM Carburetors are tested on the world's toughest proving grounds. Millions of test miles are put on these carburetors before they are accepted for use on today's highways.

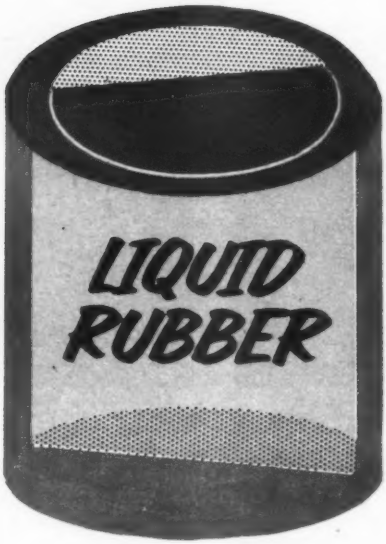
New highs in efficiency in the Rochester-GM Carburetor seem to make every mile shorter. And every gallon of gas does a lot more work! That's because new carburetor advances have been engineered, researched and tested for exclusive use on General Motors cars. These carburetors are also backed by an army of factory-trained experts who are fully qualified to keep your Rochester-GM Carburetor in perfect operating condition. See your nearest Rochester-GM Carburetor specialist for peak performance and economy. *Rochester Products Division of General Motors, Rochester, New York.*

GM
GENERAL MOTORS

America's number one original equipment carburetors

ROCHESTER CARBURETORS





PRO-CHEM liquid Neoprene, a synthetic rubber that dries to a tough, flexible bond, will adhere to almost any surface. Use it: (1) under garage doors to prevent rot; (2) to waterproof trim in the darkroom; (3) to coat perforated board fittings; (4) to repair trays and (5) boots, raincoats and other rubber and plastic materials; (6) to make bathroom rugs skidproof; (7) to insulate tool handles; and (8) to repair cracked ignition wires.

OUTSTANDING NEWS FOR POWER BOATERS!

NEW AC PLATINUM ELECTRODE SPARK PLUGS!

Proved in planes, now available for marine applications! If you want the highest performance from your boat motor you'll want AC platinum electrode Spark Plugs!

New platinum electrodes deliver peak performance throughout longer service life! Their finer points ensure powerful sparking even under sub-normal conditions of low voltage or weak coils . . . higher heat conduction prevents pre-ignition . . . non-corrosive properties provide more permanent gapping . . . smaller electrodes assure better scavenging action. New centrifugally cast silver core permits longer insulator tips because of more rapid heat dissipation—and greater anti-fouling characteristics. AC's platinum electrode Spark Plugs bring new standards of performance to extreme engine applications. They're rustproofed, too. Get platinum electrode ACs!

AC

PLATINUM ELECTRODE SPARK PLUGS

AC SPARK PLUG ✣ THE ELECTRONICS DIVISION OF GENERAL MOTORS

[*Continued from page* 129]

retains high gloss without polishing, Chevrolet recommends polishing after about a year, especially in a climate of sunshine and humidity, such as Florida's.

Because two signal light bulbs flash when making a turn, a special flasher is used to take care of the added electrical load; you can't use flashers that were built for previous models.

If the car is factory-equipped with air conditioning, its Rochester 2GC carburetor will have an idle compensator to supply more air and thus prevent stalling during the prolonged hot-idle periods. (Rochester Products Division of General Motors Corporation is offering a similar controlled-air bleed for use on any car or truck engine. It's called Carb-AIRator and sells for $3.25.)

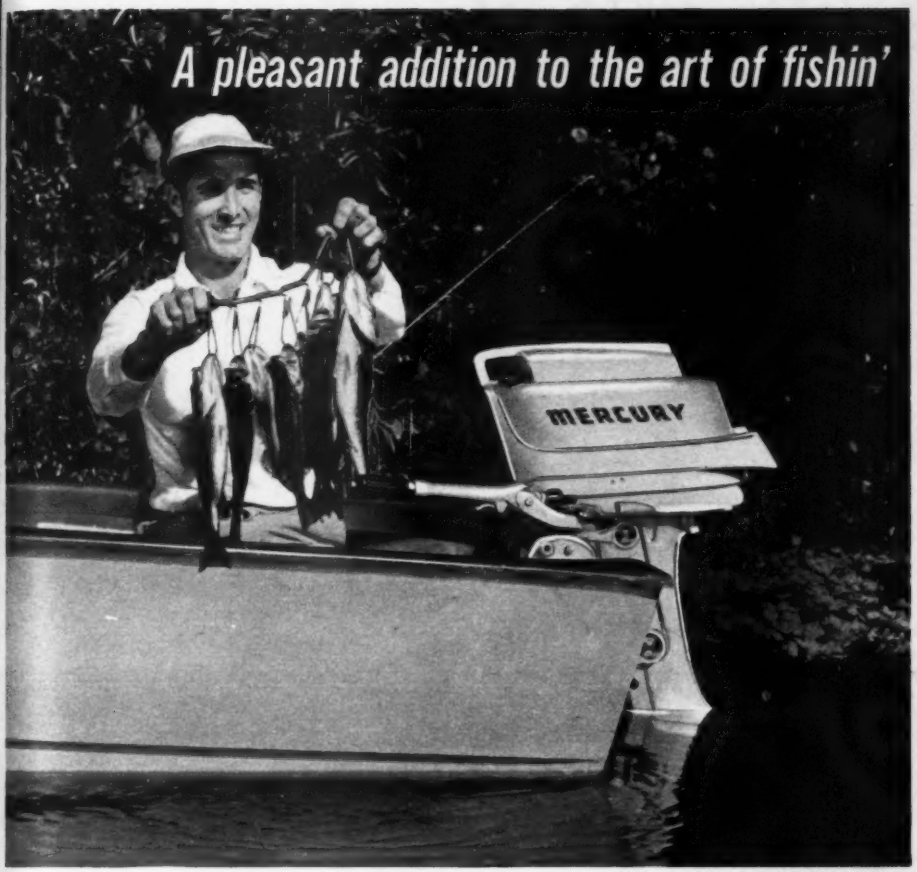
When jacking up the 1959 Chevy, avoid putting the jack lifting blocks in contact with the sheet metal valance panels located below the bumpers.

If the blades of the two-speed electric windshield wipers hesitate at a point on their initial stroke it's due to the way the drive mechanism works and is nothing to worry about.

There's no drain plug for the gas tank on the 1959 model but if the tank must be drained this can be done by siphoning fuel from the filler pipe. It is important that all the gasoline be drained from the complete fuel system if the car is to be stored for any appreciable length of time. Failure to do this can result in the formation of gum in the fuel system which will adversely affect proper engine performance.

Finally, a word about the clutch, which is a diaphragm spring type assembly very similar to the mechanism used in the '58 models. The pedal should travel ¾ to one inch before engaging the spring. For accuracy, make this check with your hand, not your foot, when attending to the required adjustment.

Get acquainted with your new Chevrolet and you'll find it will long remain a reliable and high-performance friend. •



Photographed at Florida's Silver Springs.

dependable MERCURY OUTBOARDS

There's been *new* progress in fishing motors by Mercury . . . *new* freshness of design in the forward *Glide-Angle* look . . . more dependability . . . a water pump specially designed for operation in weeds and mud. *Automatic Transmission* that puts shift, throttle and steering control in *one hand!* Weedless *Glide-Angle* Design slides safely over submerged objects. There's no "wrassling" to fix broken shear pins because Mercury got rid of them years ago, introducing modern propeller clutches! So go *where* you please, *when* you please! Your Mercury is rugged, reliable — and quiet as a good fishing companion should be. See your Mercury dealer now for a *free* demonstration ride. Choose from three *Glide-Angle* twins — 22 hp Mark 28A, 15 hp Mark 15A, 10 hp Mark 10A. They're easy to look at, easy to own with the Mercury time payment plan.

MARK 28A
22 hp

Single-Lever Control and Ride-Guide Steering available for remote operation. Safe single-line, vacuum-fed fuel system eliminates dangers of pressurized fuel tanks.

MERCURY—the 50,000-mile outboard, the world record line for '59!
Twins—6 hp, 10 hp, 15 hp, 22 hp. Fours—35 hp, 40 hp, 45 hp.
Sixes—60 hp, 70 hp. "Full Jeweled"® Power throughout!

Write for FREE Catalog! Address Dept.MI-5© 1959 Kiekhaefer Corp., Fond du Lac, Wis.

MONTHLY PHOTO CONTEST

$25 Award ACQUITTED
Kudos to Gloria Gebest of New York City for this vivid photo story shot with a Super Ikonta B on Ansco Supreme: 1/100th f-6.

$10 Award .....CHEEKY BOY WITH HORN
By Ron Larsen, Buffalo Grove, Ill., using a Soligor Reflex. Speed: 1-1/25th. Stop: f-8.

$10 Award .....NEW YORK VIGNETTE
Recorded by a Rollei in the hands of M/Sgt. L. H. Best, San Francisco. 1/50th at f-11.

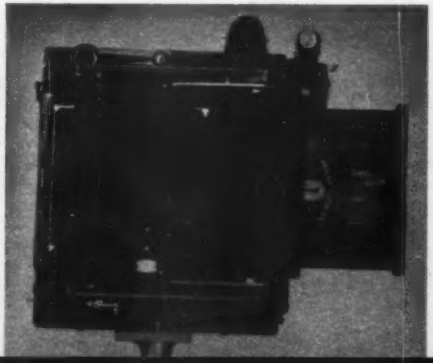
$10 Award MR. THOR JOHNSON—FARMER
Portrait by Leo Johnson, Flint, Mich., was made with a Rollei on Tri-X: 1/60th at f-8.

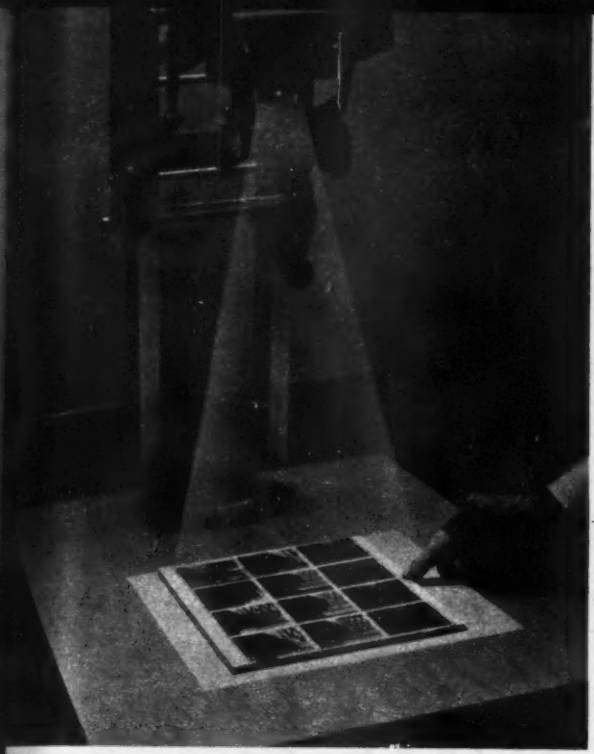
Please put your name, address and picture-taking data on back of each print. Wrap with cardboard stiffeners and enclose a self-addressed stamped envelope or postage for return of unused photos. Prize-winning pictures are not returned. Judges are MI Editors. Duplicate prizes awarded in case of tie. Address entries to: *Mechanix Illustrated*, Photo Contest, 67 W. 44th Street, New York 36, N. Y.

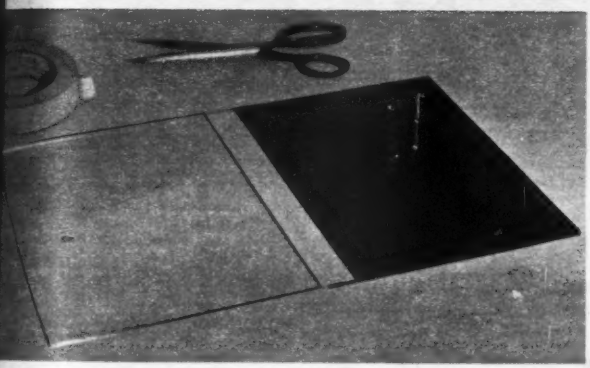
HOW TO GET
24 Exposures Per Pack!

TWO EXPOSURES above were made on single sheet of 4x5 film. Method of doubling your exposures is useful when film supply is running low or large negatives aren't needed.

PROCEDURE is simple. With film pack holder unloaded, slide is pulled out until one half the opening is covered (left) and file is used to mark the slide as shown. When loaded pack is in camera, mark shows just how far to pull out slide for the first exposure (center). For the second exposure, the film tab is pulled out half-way (right).







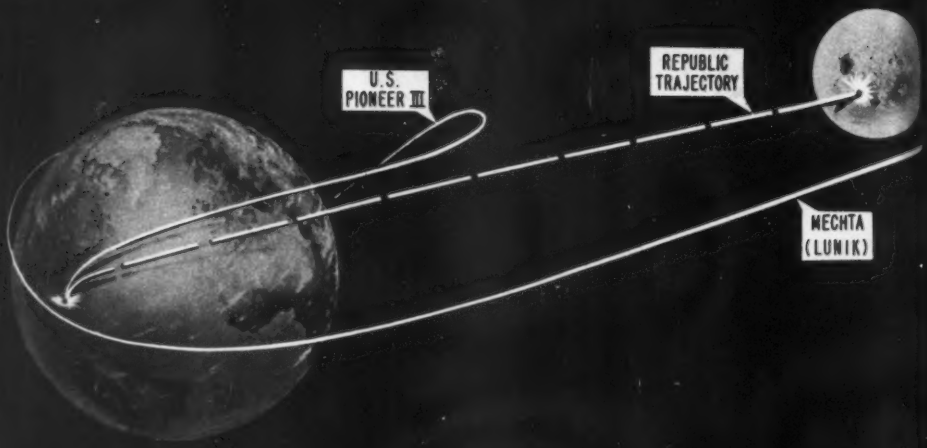
FRAME of Bakelite and glass has a masking tape hinge.

TWELVE 2¼x2¼ contacts can be made on an 8x10 sheet.

50-CENT CONTACT PRINTER

MANY an amateur photographer thinks he can look at a n gative and say, "Ah! There's a picture." Then, after spending much time cropping on the easel and making test prints to see where he should dodge and where he should burn in, he gives it up as a worthless job. Other times he never even tries and passes up a picture that would be perfect with a little cropping.

Most advanced amateurs and professionals make contact prints of their negatives so they can see what they have instead of trying to guess. By making a simple printing frame, you can do the same. Just buy an 8x10 piece of clear picture frame glass (about 35 cents) and a piece of Bakelite the same size (15 cents). Then join both with a hinge made of masking tape and you have it. By cutting your film into strips, you can print a twelve-exposure roll of 120 film or a 36-exposure roll of 35mm film on one sheet of 8x10 paper. Lay the paper on the Bakelite base, put the film strips on it and turn the glass over to hold them in place. Use your enlarger as a light source with the lens wide open. Try an initial exposure of 30 seconds; more if the prints are too light, less if too dark.—*Benjamin Myers*



The Amateur Telescope Maker's Page

ORBITS

REPUBLIC AVIATION scientists have a formula to guarantee a sure hit on the moon, within one mile, they say! An IBM machine makes 5 million computations in 5 minutes to come up with the combination.

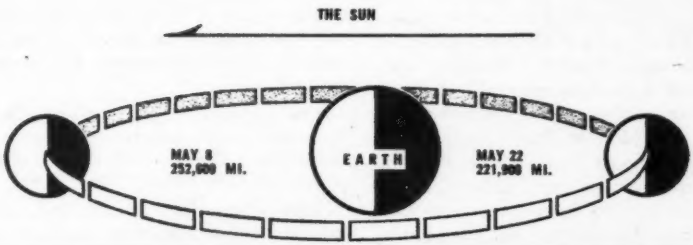
PIONEER IV and Mechta were actually in orbit around the sun before they left their launching pads. The real engineering feat was achievement of a propulsion system powerful enough for the rockets to escape the earth's gravitational clutch and assume an independent path in the Solar System. American and Soviet scientists also took advantage of the pull exerted by the moon, which at the last quarter was ideally positioned.

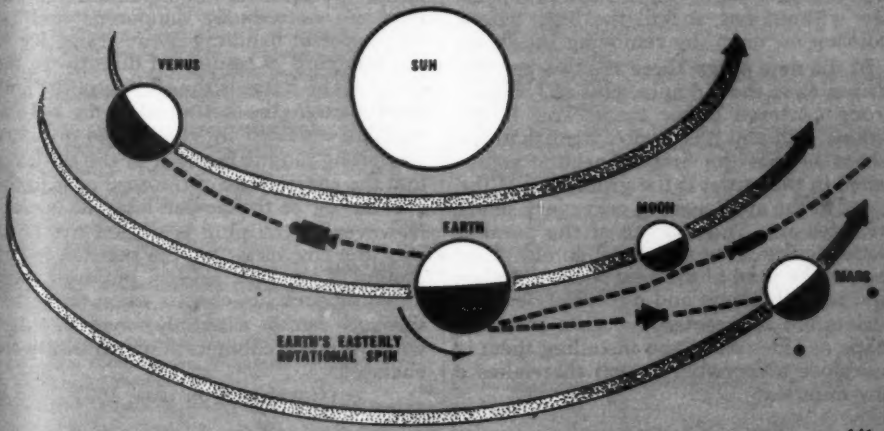
United States space men at Cape Canaveral, Florida, make use of natural boosters too, including speedy easterly rotation of the earth, although the Discoverer probes being fired from Vandenberg Air Force Base, 170 miles north of Los Angeles, California, go aloft in a north-south axis. Every terrestrial area consequently turns underneath them. This is generally why Russian Sputniks become intermittently visible in the twilight from a given location.

Most interesting about objects hurled into space is the extremely delicate balance of forces they encounter. While the Soviets' first cosmic vehicle was probably intended to hit the moon, and did indeed pass fairly close by, it was not attracted enough to orbit, much less plunge to the lunar surface. At best it was slightly deflected. Similarly when the day of throttle-controlled, manned space ships arrives, very little blast energy will be needed to effect a major change in the plan of travel, except in the immediate proximity to a planet. That is why [*Continued on page* 145]

ABOVE: Unsuccessful moon shots describe a broad arc and are in orbit only because the earth is also moving in space.

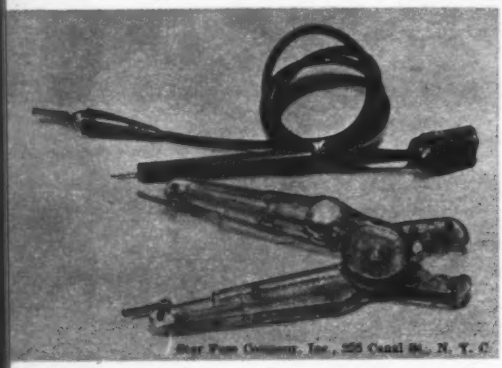
THE MOON'S APOGEE AND PERIGEE THIS MONTH





ROCKET TO VENUS will be launched in direction opposite to earth's revolution around the sun. To Mars it will capitalize on earth's rotation and orbit.

[*Continued from page* 113]



CIRCUIT TESTER and fuse puller is used to check continuity of appliance and will also show if frame is "hot" in relation to line.

of particular importance in laundry machines, air conditioners, mixers, etc. As a matter of fact, washing machines for some years have been provided with loose grounding wires which are supposed to connect to a water pipe, but because they are loose they are often overlooked. With the third-wire system and its three-prong connectors, this oversight is impossible.

At very little cost and with very little work, a home owner can "safety" every appliance and outlet. If he buys any new appliances he's forced to do something, because many of them are now factory-equipped with the three-wire cord and plug. The accompanying photos show how the various changes can be made. Remember, without fail, to kill the lines before working on them, by removing the fuses.

In the new plugs, there are two parallel blades, as in the old ones, plus a U-shaped prong centered below them. This is the ground lead and it is made longer than the others so that the first connection established in the outlet is the grounding of the frame of the appliance—a very, very smart arrangement. The spacing of the parallel blades is the same as before, so old plugs can still be used in the new outlets. Available in both single and duplex styles, the outlets are of exactly the same size and shape as older ones, and installing them is therefore a screwdriver job that takes a few minutes.

The parallel-blade connectors are intended for the usual variety of 120-volt appliances taking 15 amperes or less. A special type having tandem blades (that is, edge-to-edge) and a third grounding prong, has been developed especially for air conditioners and other devices that run on 240 volts. This makes it impossible to plug a 120-volt appliance into a 240-volt source.

There is another three-prong outlet, and matching plug, called a "crow foot" because the blades are all angled. This is intended primarily for central air conditioners, power saws and other heavy machines that work on three-phase, 208-volt supply. Power lines of this type are being installed in many new homes because it permits the most effcient operation of motors larger than one horsepower.

In revamping outlet box connections, it is extremely important to maintain the color coding of the wires. The white ground wire must go to the silver-colored or nickel screws, the black wire to the brass-colored screws.

On appliances themselves, the present two-wire cord can be supplemented by a third wire taped to it. Better still, install a whole new three-wire cable.

The third-wire grounding system described herein applies only to appliances of the straight AC type, in which the metal frame, case or body is *not* connected to either side of the line cord. Radio and television receivers of the so-called AC-DC type are notoriously dangerous and require special handling because one leg of the line cord *is* connected directly to the chassis. The latter is thus potentially "hot" even though the set itself is in normal working order. If by chance the ordinary two-prong plug is inserted in the outlet so that the chassis side of the cord goes to the ground leg of the power line, all is well. However, if the plug is turned the other way, the chassis is "hot" in relation to any ground. Last year several children were killed by such hot chassis when the latter, through faulty assembly, made contact with the metal cabinets in which they were enclosed.

[*Continued on page* 166]

Golden Hammer Awards

[*Continued from page* 120]

Grimsley, Ont., Can.; Robert Marino, Lake Mohecan, N. Y.; G. Sciarretta, Lynn, Mass.; E. T. Wiegand, Baltimore, Md.; Frank A. Solner, Worth, Ill.; Kenneth M. Kruger, Garrison, Iowa; Bosnar Miro, Zagreb, Yugoslavia; Leroy Sprout, Kansas City, Kan.; John Geshon, Barnesville, Pa.; Gerrit Dorrehl, DeAar, S. A.; Robert L. Toothman, Kingmont, W. Va.; Bill Holliday, Alderson, W. Va.; Alex Kaplan, Savannah, Ga.; Forrest H. Keiper, Bethlehem, Pa.; Lloyd Papineau, Alexander, N. D.; Paul Wiegman, Pittsburgh, Pa.; Charles E. Murphy, Red Lion, Pa.; Charles R. Cook, Paducah, Ky.; B. J. Tomplait, Zavalla, Tex.; Herbert R. Gerdy, Brunswick, Ga.; Joe Furrey, Dayton, Ohio; Walter J. Smith, Dayton, Ohio; Herbert D. Ward, Lakewood, Calif.; M. L. Woodruff, Lisbon, Me.; Joe B. Arnold, Brewton, Ala.; Howard R. Wegner, Berwyn, Ill.

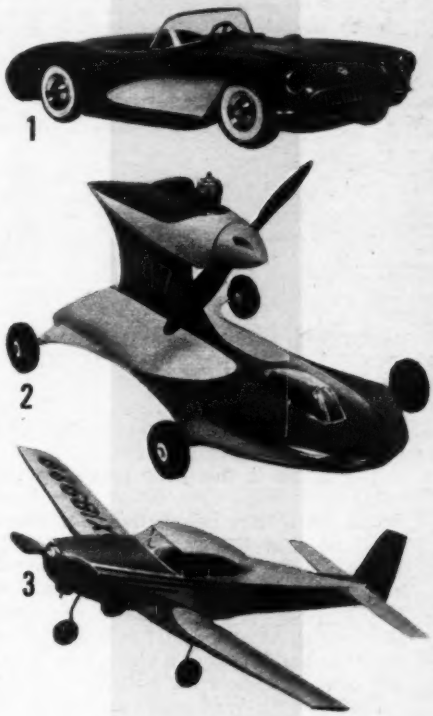
The following craftsmen have been awarded CERTIFICATES OF MERIT for their projects:

Ben Bratek, Buffalo, N. Y.; Joseph D. Eakin, Petersburg, Tenn.; Ed Bishman, Columbus, Ohio; Ed Ksiazek, Allegan, Mich.; Donald E. Keplinger, Baltimore, Md.; Thelma Mills, Memphis, Tenn.; Stanley Brzostowski, Bayonne, N. J.; A. C. McCaleb, Sunray, Tex.; Bobby Hendrickson, Brooklyn, N. J.; Maurice Richard, Hamilton, Can.; Fr. Dean Pellman, Oldenburg, Ind.; George James, Meriden, Conn.; Lewis H. Boese, Fresno, Calif.; Henry E. Rachow, Rochester, N. Y.; J. Strazzo, Brooklyn, N. Y.; David Treganowan, Pittsburgh, Pa.; Ed Neal, Vallejo, Calif.; Robert Paparelli, Providence, R. I.; David D. Morgan, New Martinsville, W. Va.; Mrs. George Williams, Path, Tex.; F. P. Walker, London, England; Joshua Jacobson, Brooklyn, N. Y.; Robert Neill, Kent, England; Bernard H. Olbrys, Trenton, N. J.; William Rodman, Guilford, Conn.; Leonard P. Erickson, Fort Hood, Tex.; Joseph McMenoman, Huntington Station, N. Y.; Rudolph J. Pajakowski, Roseville, Mich.; Broughton Schackford, Conway, N. H.; H. H. Hedberg, Shreveport, La.; George M. Paulers, Balto., Md.; Vern Luby, Everett, Wash.; Kenneth E. Kunstman, San Fernando, Calif.; P. R. Gugliuzza, Ozone Park, N. Y.; Joseph Morris, Lindenhuear, L. I.; William Lally, Rahway, N. J.; Kenneth L. Gentry, Bristol, Tenn.; A. J. Fritschy, Jr., Zurich, Switzerland; Donald H. Wulf, Davenport, Iowa; Art Kasteusen, Racine, Wis.; Lloyd N. Hodges, Ft. Walton Beach, Fla.; Charles Woltzer, Willmar, Minn.; Peter Galster, Alberta, Can.; Rolf G. Habermann, Passaic, N. J.; Raymond B. Williams, Marion, Ohio; Howard Glowatcky, Princeton, Ind.; Nicholas Buzzelli, Cuyahoga Falls, Ohio; Earnest E. Drier, S. Boston, Mass.; Vernon Shirley, Emporia, Kan.; Ellsworth Reiner, Mt. Joy, Pa.; Ralph Wyamt, Hudson, N. Y.; Howard F. Morash, Nova Scotia, Can.; A. J. Simpson, Bulawayo, Southern Rhodesia; Andrew A. Fehr, Merrill, Wis.; Jeffrey Huberman, Miami Beach, Fla.; Clarence Burr, Alliance, Ohio; Barton Hyde, Bx., N. Y.; Alyce and Cliff Blazer, Sylmar, Calif.; Edward J. Polito, Massapequa, L. I.; Malicahi Colter, Corona, L. I.; Henry W. Gauger, Manitowoc, Wis.; Raynee Augustus, Sr., Parsons, Kan.; Gerald R. Dilhl, Alliance, Ohio; John Dougherty, Jr., Chester, Pa.; Henry W. Douglass, Santa Ana, Calif.; Arthur W. Reeder, Danville, Ind.; P. G. Rudin, Alexandria, Va.

Watch for names of more winners next month.

What's Your Plan, Man?

A limited number of full-size plans for these popular MI models are still available. Check off the plans you want on the coupon below. As always, it's first come, first serve—so mail in your order today and get in on the fun.



1. Here's an 18-inch scale model of the Chevrolet Corvette. It has a Fiberglas body, takes a .14 gas engine and will do about 40 mph. Real head and tail lights add to the realism.

2. Scamper is a powerful propeller-driven car or boat that will speed down a runway, at the end of a tether or over the water at speeds ranging from 20 to 40 mph. Length is 15 inches.

3. The North American Navion is a smooth-flying control-line model. It has a 36-inch wing span and takes a .19 to .49 engine. Plans include photos, material list and instructions.

Send 50¢ for each plan ordered to Mechanix Illustrated Plan Service, Fawcett Building, Greenwich, Connecticut.

Please send me the plans I have checked. I am enclosing the required amount.

☐ Corvette No. M-243
☐ Scamper No. M-242
☐ Navion No. 369

I am also enclosing 10¢ for your latest MI Plans Catalog containing pictures and descriptions of 132 plans. ☐

NAME .....

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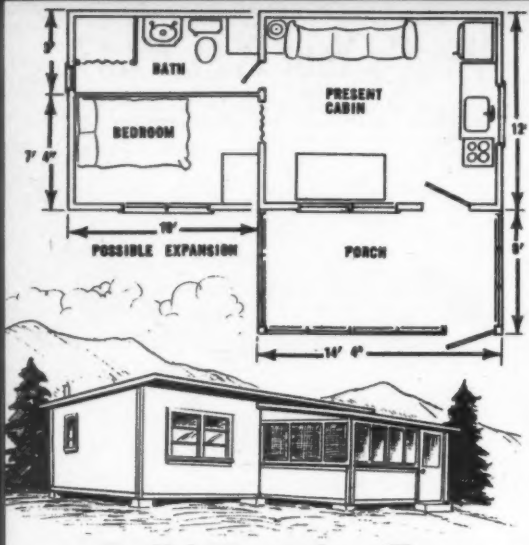

Build Vacation Home

[*Continued from page* 101]

can be removed in a few minutes to permit the two units (cabin and porch) to be moved separately.

The porch is the same length as the cabin and eight feet wide. The floor drops six inches below the cabin-floor level so that the porch roof is overlapped by the roof of the cabin. The sill and joists are 2x6's with cross-bracing bridging the joists to make the floor more rigid. After the sill has been spiked together and blocked in place, four holes are bored to allow for bolting it to the cabin sill with ½x6-inch carriage bolts.

A 2x3-inch piece is now attached to the front of the cabin above the door and windows with lag screws. It is placed just far enough below the overhang of the cabin roof to allow attaching the rafters and roof boards. Then erection of the framing and application of roofboards and roofing are attended to in that order. Finally, the siding is nailed in place.

At a later date a bedroom and bath can be added to this cabin, also a water system and sewage disposal in most instances. •

LARGE-SCALE PLANS

of those illustrated with this article are now available. Send $2.00 to Mechanix Illustrated Plans Service, Fawcett Bldg., Greenwich, Conn. Please specify Plan No. HJ-30, Summer Cabin, when ordering plans for this project.

Gotta Dime?

MECHANIX ILLUSTRATED

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132

TESTED PLANS

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Okay, send it to Mechanix Illustrated Plans Service, Greenwich, Conn., for the latest copy of MI's Plans Catalog. It's just chock-full of projects to keep you happy in your workshop—132 of 'em. Don't forget your name and address. Number too, please (zone that is!).

Orbits

[*Continued from page* 140]

astronomers think about tremendous metallic "sails" as a driving medium, responding merely to the *pressure of sunlight.*

The contemplated trip of millions of miles to neighboring Venus and Mars will thus rely on unopposed momentum in the vacuum of space for much of the journey. In going to Mars, whose orbit lies outside that of the earth, greater acceleration is required because a rocket or space ship will be climbing away from the sun. However, only an additional 870 mph over the 25,000 mph escape velocity, and the earth's regular 66,600 mph orbital rate, is necessary for enough momentum to reach Mars; but that minimum power method would take about 260 days! Conversely, some retarding must be provided on the "downhill" trip to Venus. The rocket would be kicked off in an opposing direction from the earth's forward motion and as a result of slower speed would commence falling toward the sun. These fascinating factors are vital tools of space navigation.

To get clear of the Solar System and perhaps coast to one of the nearer stars, the departure would have to be made at nearly 40,000 mph, surprisingly low. Unless the speed was vastly abetted by operating rocket engines aboard space craft, such journeys would take centuries to complete!

Familiar Newtonian laws govern space flying. For instance, rocket jets answer to the proposition that for every action there is an equal and opposite reaction. The fact that anything will remain in orbit involves conflict of a normal straight line tangent of motion and gravity, which keeps tugging it down, so to speak and "makes" the orbit.

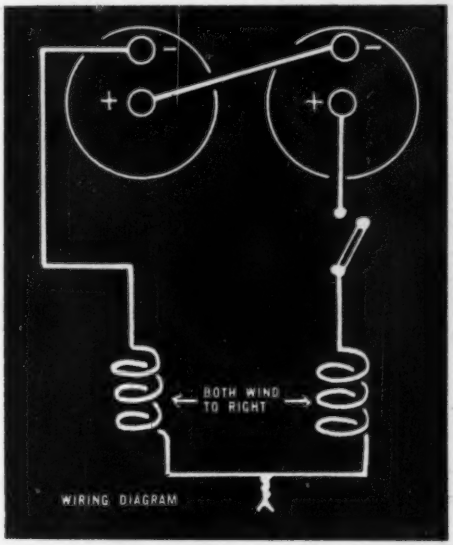
Orbits are elliptical in form. Only by miraculous chance, or very accurate guidance can they be circular. The closest point of the orbit is its *perigee;* the farthest point is called *apogee.* The moon varies as much as 30,000 miles every month; that is why it often appears larger in the sky to the naked eye.

The closer a satellite is to its parent planet, *the faster* it has to move to stay in orbit. The speedy moons of Mars, the Van-

[*Continued on page* 166]

Experimental Magnet

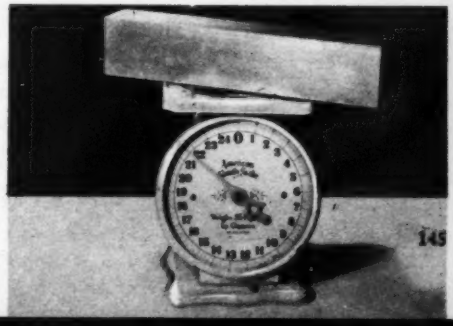
[*Continued from page* 116]



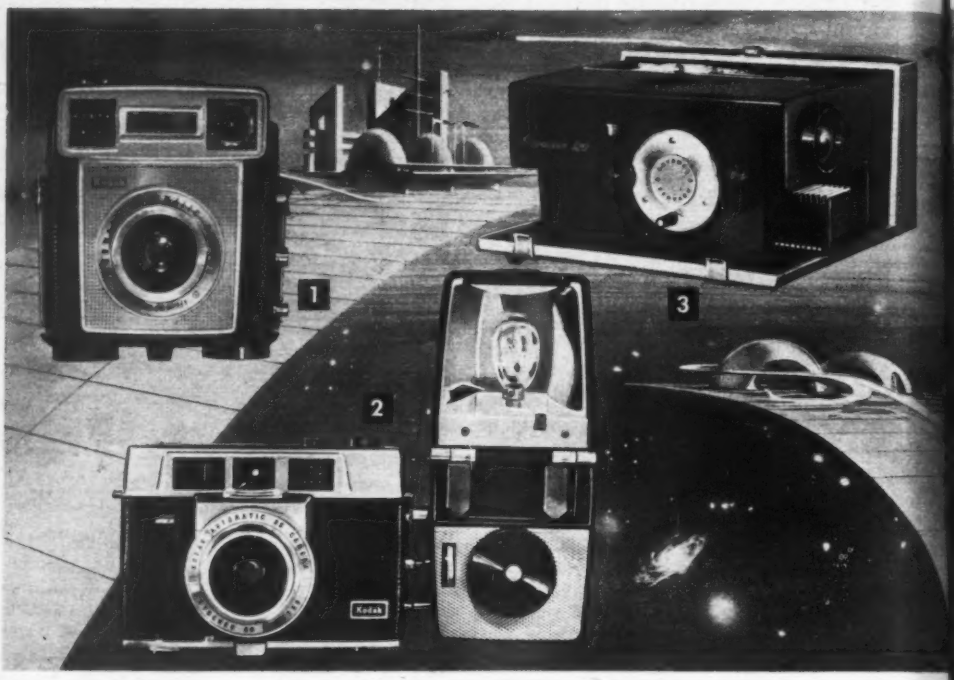
WIRING of both coils must be in the same direction or they will cancel out each other.

ments with the electromagnet. Pass the blade of a screwdriver slowly across both poles and you will magnetize the blade. Handy for picking up small screws. Float a needle on water (it can be done if you lower the needle gently into the water by means of a fork) and you will have made a compass. Pass a pocket compass near the poles and you will see how one pole repels the needle and the other pole attracts it. Get some iron filings and place them on a sheet of stiff paper. Bring the paper near the poles to observe the lines of magnetic force.—*R. J. Capotosto*

IN A TEST conducted in MI's office, this magnet actually gripped and held a 21-pound steel bar.



NEW FROM KODAK



Kodak welcomes you to the automatic age in photography!

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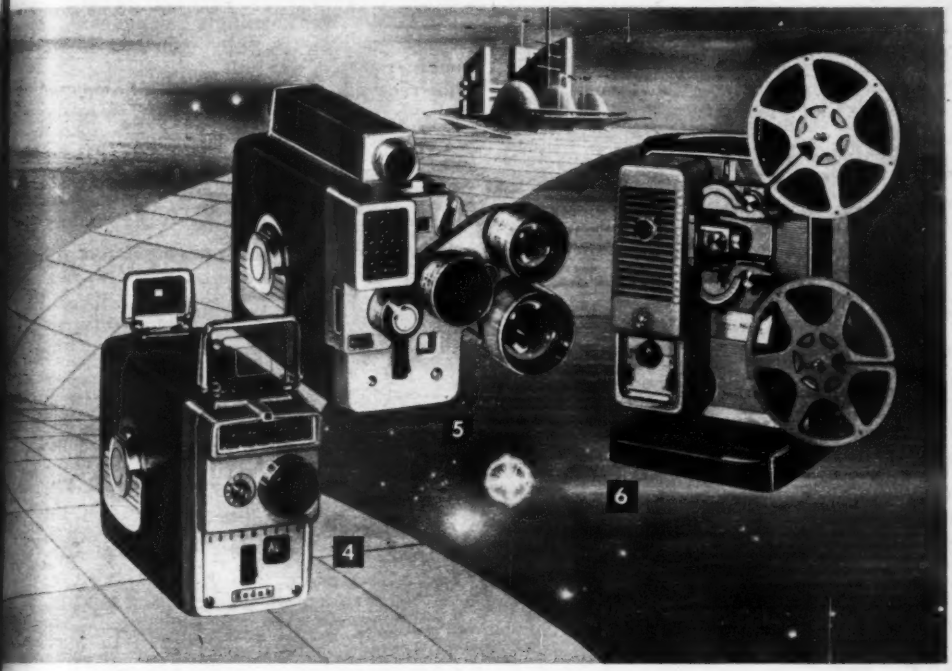

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Kodak
TRADEMARK

[*Continued from page 87*]

was made at high tide, at which time it is very difficult to ascertain the condition of the beach without a diving suit. Besides, all the extra available help was needed at the Speedway the day before the first big race—and that's where they were all to be found that Thursday instead of on the beach.

The MI Trophy runs were also put over until the following Monday. The main event saw a Pontiac winning again at an 87.082-mph average. It was driven by Bob Pemberton who was given the green flag by MI editor Bill Parker, Official Starter for the event.

The beach events, however, were the poor relation of the big, shiny, new Speedway, still untried and unproven as Speed Weeks got under way. The first competitive event was an economy run for any movable vehicle with four wheels and weighing 3,000 pounds, powered by anything except pedals. One old Plymouth was chain-driven by a one-cylinder washing machine engine and several cars had lawn mower plants for power! Your curly-headed Uncle Tom ran the Simca Vedette (tested in this issue) even though we didn't meet the weight, to get some idea of its economy.

The Speedway itself is the finest 2½-mile race track ever built. This is not just my opinion but the opinion of several hundred experts on hand for the events. These included Dick and Jim Rathman (Jim was the winner at Monza last year), Tommy Milton, Pete DePaolo, Duane Carter, Lee Wallard, General Curtis LeMay and dozens more who know all the principal race circuits on earth. They all conceded that this was not only the greatest race track but the fastest and safest. It can be claimed the safest because in two 100-mile races (one for late model stock cars and the other for convertibles), one 200-mile modified jalopy race and a 500-miler for sedans and convertibles, not one driver received a serious injury—something that even the experts believed an impossible feat before the start. Bear in mind, these were all at speeds just an eyeblink below those attained at Indianapolis.

The most remarkable thing about the terrific speeds the so-called "stock" cars were making on the new high-banked track was the fact that basically these rigs were built as passenger vehicles. As George Forman, the noted sports car technician, pointed out, "If an Indianapolis-type race car does 150 mph or even 200 mph—so what? Its sole purpose in life is to go fast—that's all it was designed and built for." These stock cars were built not to be raced but for carrying Junior to school or the old man to the saloon on Saturday night.

Sure, they'd been altered somewhat and weren't as pristine-pure as the cars that ran in the beach trials. But they were at least 90 per cent out-and-out stock without any alterations allowed to body contours for better streamlining, etc. It's a great tribute to the set-up men of these stock cars that they can take these road hulks and tune them so that they can travel 500 miles at speeds close to those made on the famous Indy track.

It also testified to the greatness of the NASCAR drivers, the actors who really put on the show. Each day before the race, the U. S. Navy's Blue Angels jet flying team gave a gigantic exhibition of precision flying over the Speedway. To many, even the jet jockeys' feats were upstaged by the driving exhibitions on the track. At one time there was a close knot of 17 cars traveling as if they were all welded together bumper-to-bumper and side-to-side at better than 140 mph for over 40 miles! This precision driving was the greatest exhibition of perfect timing and sharp reflexes this writer or any of the spectators had ever seen before. One goof, one little mistake and there would have been the damndest hash of parts, both automotive and human, ever seen.

Another time during the race weekend, 11 late model stock cars averaging better than 145 mph traveled the course for over 30 miles never separated in front, back or at either side by much more than the length of a pack of cigarettes. As the race progressed there were a few hard spin-outs at these speeds but the drivers' skills were so advanced that they handled these spins as if they were doing 20 mph instead of 140. The final and most important race, the Daytona 500, was so close after 500

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miles of racing that hundreds of movie and still films had to be examined and it was three days before 44-year-old Lee Petty's '59 Oldsmobile was declared the winner (at an average speed of 135.521 mph) over Johnny Beauchamp's '59 Thunderbird.

I was on hand when a bulldozer pushed over the first palm tree just a bit more than a year ago. That was the start of clearing 450 acres of dry scrub and cypress swamp. How Bill France managed to build this Speedway in one year out of an absolute jungle must go down in history books as a modern day miracle of will power. The track was not only completed and paved on schedule but there were 21,000 grandstand seats available and jam-packed. The infield overflowed. The crowd totaled 47,000 for the big 500-mile event.

There was a lot of hurrying-up to get ready for this first race and a lot of major problems lie ahead for this newest and greatest of all tracks. The two most important problems are that the cars, even when they are doing 145 mph, look slow. This is because it is the first track of its size ever built where the spectator can see every inch of the course the entire way around. I saw the late Marshall Teague drive an Indianapolis race car here at 171 mph and Jim Rathman turn a lap at 170 mph and I was amazed that neither car looked at all fast. Just as a plane passing overhead at 200 mph, a mile up, looks like it is barely moving, these race cars appear to be creeping as they go down the backstretch and then into the 31° turns.

Bill France is going to have to employ some theatrical illusion tricks to keep great races from appearing dull. For instance, a few dozen tall palm trees spaced a hundred feet apart near the backstretch wouldn't impair the spectators' vision a bit but might give a better idea of how fast the cars were winging by. This is a problem that won't be easy to solve. As one Indianapolis great said to me, "This track is so perfect that a car doing 200 mph in the backstretch or through one of the highly-banked turns would look as though it were trying to park."

The other major problem is that race tracks, like actors and politicians, depend for their very existence on good publicity, especially photographs. The Speedway, at this writing, is a real pig to photograph. All the feasible spots where the pro photographers would like to be are banned in the interest of safety. There is nothing duller than a picture showing a car half upside-down going through a banked curve when the picture must be taken from at least a quarter-mile away. Furthermore, all photographers end up with the same shots from the same limited angles.

Photographically, the track as of now is a dud and some sharp thought will have to go into the matter of photographer placements before another Speed Weeks rolls around. From an action-picture standpoint this Speedway is just a Raggedy Ann when compared with the old beach-road course where cars charged down the beach at much slower speeds but spouted plumes of sand high in the air against an Atlantic Ocean background—truly something to behold and the only place in the world where it could be done. Seeing Curtis Turner throw a car into a 200-yard broadslide before shaping up for a corner, while sand flew as high as the Waldorf, is an impossible sight on a hard-paved track.

The beach had glamor, in the opinion of many publicists, the greatest glamor in the racing world. To the hard-boiled photojournalist the Speedway is just another track, meaning something extra hard to sell an editor. Besides, girls in bathing suits look natural on a beach.

In summing up—the beach course is still the glamor kid of Speed Weeks in this bald-headed opinion. But you can't get away from the fact that the new International Speedway is as functional and perfect as you can find, as well as the fastest and safest ever built. •

The Simca Vedette

[*Continued from page* 92]

find out just what it would do, even though the required average speed was slightly ridiculous. At just over 15 mph the Simca averaged 37.7 mpg, which is about as useless a piece of information as any buyer this side of the ice floes could wish for. But at least it was official. Actually, for around-the-town driving or on the average trip, these cars should get about 25 miles to a gallon and do it in stock condition on the cheapest fuel available.

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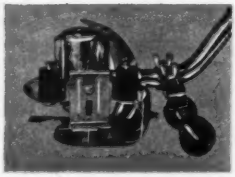

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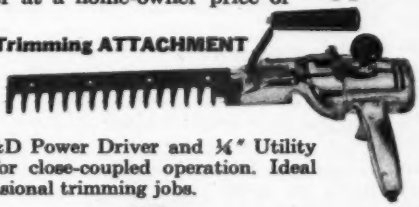

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Let's roll the real goodies out on the table for closer examination. This is a comfortable car for four people to ride in, over potholes and even across railroad tracks, which we did a number of times. The comfort was outstanding when factors such as size and wheelbase were considered. The headroom inside is superior to many American cars and the car is loaded with little niceties such as a two-tone horn, soft-spoken for city use or blatting for turnpike attention. Unlike many imports, this job had an excellent trip meter, handy for the average owner and an absolute must if you go in for rallies.

The seats are slightly shallow but spread out after a few hundred miles of driving (the seats, not you). The emergency brake activates a red light on the instrument panel when it is on, a gadget rarely seen on imports. Another feature is that you can turn on your right or left parking lights only, to conserve your battery in areas where outside lighting is demanded. Still another (which got the Stamp Of Approval from The World's Number One Trunk-Tester, Jim McMichael) was that this job really has terrific trunk space for its size. Two people could cruise this car from coast to coast with enough clothing for a month's vacation.

I actually had this Simca test car in my possession for over a month. Jim McMichael, whose winter home is 20 miles from mine, borrowed it several nights and reported one very important virtue that nearly every American car lacks: it passed the drive-in color movie test! If you've ever gone to an outdoor movie in an American blimp with a heavily-tinted windshield, you'll know what I mean—a green Brigitte Bardot will never go. The Simca, due to its clear windshield and comparatively short (106-inch) wheelbase, can be propped up on a movie mound so you can see the Monsters From Outer Space in all their unsuppressed ugliness.

The only thing I had against the car was its rather drab, two-tone paint job of cream and rust. Two tones on anything smaller than a balloon is about as appealing as a red nose on a chorus girl. In an all-solid color this job would be a lot sharper in appearance. In some spins I made on the beach I found it behaved beautifully and pirouetted like the center pole in a phonograph turntable when I asked it to. On hardtop roads we found it to be a top-flight cornering car with positive control.

Now, let's find a few things wrong with this little guy. The front vent windows are designed so that they can't be fully reversed to allow you to direct a stream of air at your face in sticky hot weather. This is particularly important in this car because on a few 90° days I found the small size of all the windows made the inside body heat extremely uncomfortable. This is not the rig I'd pick to make summer tests in Death Valley. If the small vent windows could be cocked around further it would help a lot—but this could only be accomplished by some metal-strip bending and twisting, which would louse up your seal the next time it rained.

Simca makes a big deal in press releases over what they call their "climatizing system" which features an adjustable fresh air and ventilator system that is supposed to scoop the air in from forward ducts. Either ours was stuffed with a dead cat or it doesn't get truly functional until you reach 200 mph. The inside cab was too hot on a hot day. But then, as Louis Pasteur would be quick to point out, "You can't have everything."

Some of the extra tidbits or refinements offered by the Vedette are the lack of idiot lights (except for oil pressure) now being featured in place of instruments by Detroit. The Simca has a good fuel gauge, a real water temperature gauge, an electric clock and a "double-jet" windshield washer which is foot-controlled. In addition, it has a genuine ammeter and a half-ring-type horn control. The instrument lights are rheostat-controlled. It has a glove compartment light and a ceiling light. It features a cigarette lighter and front and back ashtrays, two sun visors and an armrest for the backseat passengers. The trunk is rubber-carpeted and the lid is counterweighted.

In other words, this is a quality rig. It delivers for about the same price as the Volvo and offers more interior room. The engine, just like the good old Fords of the past, is as easy to get at as a politician when you have a campaign contribution. Nice to work on and you won't need flexible bones to make adjustments.

One of my earliest experiences with a Simca took place on the Place de la Concorde in Paris (known to me as "the

ratrace"), where eight to ten lanes of traffic converge at once from every direction including, at times, up. I was riding in a taxi when a Simca driven by a wild-eyed, bereted Frog slammed into our stern. A terrific argument between my driver and the Simca owner ensued. When all the pleasantries had passed, I asked my driver (who, by an odd quirk, could speak English), "What's the matter with him? *He* hit *us* in the rear." My driver answered, "He said he blowed his horn"—and that's what I'm doing with this piece right now.

In summing up, Chrysler has an extremely strong answer in the Simca to General Motor's Vauxhall and Opel and Ford's Zephyr. •

He's Stuck With Success

[*Continued from page* 94]

sometimes suggested. But gluing was tricky for the do-it-yourselfer. So Jack began experimenting.

Colored oil putty to match the veneer was no good because the oil from the putty made a big spot around every hole. Customers told him why some of the colored wood pastes wouldn't work on pre-finished panels. "When I go to sand off the hardened paste," they would complain, "the panel finish comes off too."

Then the notion of a hole-filling crayon came to him. By trial and error, working on his kitchen stove, Jack arrived at the formula for Putty-Stik. Customers began buying the Stiks while Jack was still cooking them up himself; a few began buying them without the paneling. But Jack didn't really see the possibilities in Putty-Stiks until he demonstrated them at a local home show where he took a booth to show off his plywood. He sold some plywood, all right—but they cleaned him out of Putty-Stiks.

That was when he applied for a patent, and registered Putty-Stik as his trademark. He got some bigger kettles and made his first attempt at a real production molding machine. And he contacted manufacturers' representatives and assigned them territories. They saw that the Putty-Stiks got into lumber yards and paint stores. This was an important step, because, as Jack says, "Even if you've got gold bricks for a buck apiece, people will still have to be sold."

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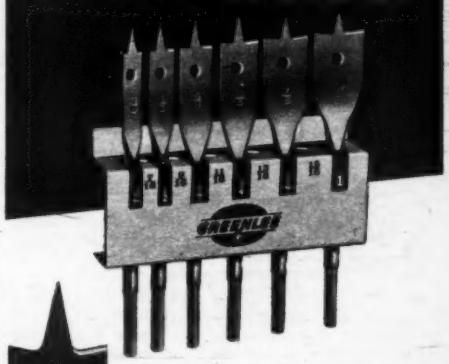

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In the retail stores, clerks don't have time to sell 39-cent Putty-Stiks, so Jack developed an attractively designed display rack to help Putty-Stiks sell themselves. Once a customer buys one Stik and tries it, he usually buys more colors to do other jobs.

Altogether, Jack makes 20 standard colors and a number of special colors totalling 42 in all. Jack doesn't label the different colors of Putty-Stiks according to the name of the wood for two reasons. First—one color will often be satisfactory for several different kinds of wood and finishes. Second—if a Putty-Stik should be labeled birch, for example, and then didn't match a customer's particular chunk of birch wood—well, that would be the last Putty-Stik he would buy. So, instead of naming colors, different tones of Putty-Stiks are numbered. This leaves the job of matching a stick to a particular shade of paneling up to the customer.

Lately, and this is one of the big reasons Jack is working his new factory overtime, pre-finished plywood manufacturers have been packing Putty-Stiks right in with packages of pre-finished plywood.

Weather has little effect on Putty-Stiks, so they can be used inside or outside. The material will not soften at temperatures below 150° F. The Stiks do not become brittle when cold. Each Putty-Stik weighs 13½ grams—enough to fill the holes in the plywood needed to finish a 10x10-foot room.

The old saw, "Necessity is the mother of invention," aptly describes the beginnings of Putty-Stiks. The way Jack has built the business shows that simple discoveries are often the best.

New products don't have to be big and flashy. They just have to be good, and Jack Leutzinger's idea for a stick of putty was a good one. •

Outer Space Mirrors

[*Continued from page* 71]

produce the heat necessary to set a newspaper afire—and that was the weakness of the Nazi scientists' dream. But such a mirror could raise the temperature on the surface of the earth several degrees—and that would be enough to make the satellite mirror a marvelous weather-control device. With it we could de-ice

Arctic sites for use as submarine bases. With the advent of the Polaris missile and under-ice launching techniques, this possibility assumes vital importance.

MI's editors believe that space mirrors can be made to work and, in the accompanying illustration, suggest a possible solution. MI's design uses a triple-stage optical system whose primary unit has a central opening somewhat similar to that of the eye doctor's head mirror. Large, concave and doughnut-shaped, this unit collects the sun's rays. They are reflected upward and focussed on a second, smaller mirror which is mounted above the first on tripod legs. The doubled heat is redirected downward to a third, still smaller element. This, mounted on a universal joint, can be aimed so as to direct the thrice-concentrated rays on an earthly target.

Traveling in a low, tight orbit above the Arctic Circle, the satellite is above the earth's shadow line and remains always exposed to the sun's light and heat. Its "projecting" mirror can be continuously trimmed by an automatic mechanism to point always at the selected target. The satellite can be used as a single unit or in teams coordinated to pour more heat on a given spot or widen the area under control.

MI's proposal is designed as an unmanned vehicle, operated from an earth station. Situated atop the upper element, an electric eye keeps the main mirror always pointed toward the sun, tilting the satellite by means of linked gyros mounted in an inflated spherical housing. Solar batteries, placed around the mirror rims, generate the operating current. Ultra lightweight construction is used throughout, with inflated tubular rings and tripod legs of rubberized fabric supporting the mirrors.

Reflecting surfaces are assembled of standardized foil segments, accurately curved to combine into an optically true parabola. Focal distances, carefully calculated in advance, are fixed. The satellite's only moving parts are the gyros and small servo motors that operate the "projector's" tilting arms.

Due to the mirror-over-mirror form of the design, a shadow is cast by the upper elements on the center of the lower. As this area has no reflective value, it is left open to save weight. The resulting hole

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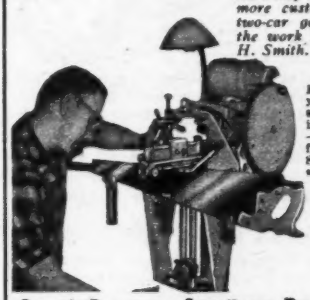

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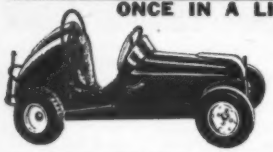

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is put to use, however. In moving the satellite from one orbit to another, a spaceship simply noses into the opening and pushes the vehicle into its new path, accelerating or decelerating its speed as required. Then it backs out and goes about its business, leaving the satellite burning-glass to its task of de-icing Arctic shores. •

The New Nylon Rifle

[*Continued from page* 67]

require lubrication of any kind because one of nylon's odd characteristics is virtual freedom from friction. Remington has test-fired guns 75,000 rounds, the equivalent of several lifetimes of shooting, without any impairment of normal functioning.

The Nylon 66 is an auto-loading .22 caliber rifle. It weighs only four pounds and is well balanced. After loading the magazine in the butt with 14 long-rifle .22's and pulling back a small operating hook once to move the first round in the chamber, you merely squeeze the trigger for each shot. As the bullet leaves the barrel, the empty case is ejected and a fresh cartridge is pushed into the chamber. The piece has no noticeable recoil.

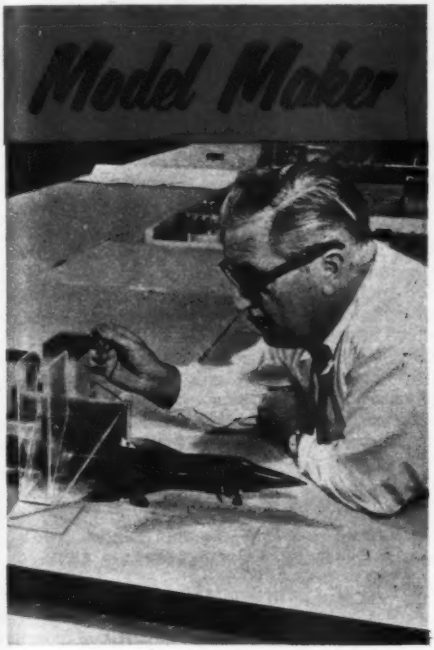
The rifle is a trifle less than 39 inches long. The nylon stock extends to within four inches of the muzzle and supports the entire length of the $19\frac{9}{16}$-inch barrel.

I loaded the magazine and emptied it as fast as I could until I had burned up 150 cartridges. There wasn't a single malfunction. Then I deliberately threw a handful of sand in the action and fired another 50 rounds. The first few shots kicked the sand away and left the operating mechanism clean. There was no jam.

Accuracy is hard to evaluate because as much depends on the shooter and on circumstances as on the gun itself. Under gallery conditions at 25 yards, the Nylon 66 makes ten-shot groups averaging about a half-inch across, which is pretty good for a short-barrel rifle. In the open, with any breeze blowing, accuracy is a matter of experience and judgment. At 50 yards I could keep a beer can hopping around as long as the magazine held out. At 100 yards, shooting prone, I could hit it most of the time and get very close on the remainder. That's good performance.

How much for this second cousin to your girl friend's sheer stockings? About $50. •

Speaking of Jobs . . .



DEVELOPING the Air Force's big one-man plane, the F-105 Thunderchief, involved many specialized skills. Not the least of these is the skill of professional model maker Mario Donaudy, a full-time employee of Republic Aviation. A conservative estimate of the number of plane models Donaudy has built comes to about 1000—and each one of them played a vital role in the development of a new plane.

The models of the F-105 and its jet muffler, shown above, saved countless engineering man-hours and dollars in the design and construction of the giant silencers used in ground-testing the fighter-bomber.

Fifty-five-year-old Donaudy prepared for his unique career at two professional schools in his native Italy—the Royal School of Naval Engineering and the Royal Academy of Fine Arts. He wasted time at neither institution—both art and engineering are apparent in his models. His career should be heartening to men who hope to find just the job for their special talents. •

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Book Notes

700 SCIENCE EXPERIMENTS FOR EVERYONE. Compiled by UNESCO; published by Doubleday & Co., Inc., Garden City, N. Y. 221 pages. ..... Price: $3.00.

WOULD you like to create a cloud in a bottle? . . . weigh the atmosphere? . . . run a telephone next door? . . . make your own soap? These are but a few of the hundreds of experiments in this book. Each chapter includes experiments covering one general topic such as botany, astronomy, geology, etc. The book tells exactly what is needed for each experiment, and each is stated simply and briefly—often with an accompanying diagram. Here is a perfect gift for the youngster with a scientific turn of mind as well as for the one who has yet to be introduced to the marvels of science.

PIN-POINT COLOR TV TROUBLES IN 15 MINUTES by Harold P. Manly et al; published by Coyne Electrical School, 500 S. Paulina St., Chicago. 548 pages. $5.95.

THIS is a practical trouble-shooting book written for TV servicemen. It covers 150 types of faulty pictures with over 1000 troubles which cause imperfect reproduction. Detailed cross-references permit rapid location of the source of picture troubles. Check-charts are also utilized to aid in trouble-shooting. A thorough study of this book's contents is bound to result in greater earnings for the serviceman.

MG GUIDE by John Christy and Karl Ludvigsen; published by Sports Car Press; distributed by Greenberg, New York, N. Y. 125 pages. ..... Price: $1.95.

PRESENT and future MG owners are herewith advised of an absolute necessity in the form of this excellent handbook which describes the inception, development and modifications of the MG from the TC model to the current MGA. Plenty of photos and vital statistics plus general tuning and maintenance information make this booklet required reading for the smart elite who drive one of these Morris Garage gems.

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Hook Flounder

[*Continued from page* 64]

and accuracy. When I fish waters protected from high winds, strong currents and tides, I use a striper fly rod and light sinker. A good second choice for this is a light, fresh-water spinning outfit.

Hooks present no problem as long as you stick to the Chestertown type and to sizes from six to 12, depending on the size of the fish running. Sinkers can go from one-quarter ounce to several ounces.

Best baits are the blood or sand worms, night crawlers, clams or mussels in order named. Small baits are most productive because winter flounder have small, sucker mouths.

While summer flounder may feed on top at times, the winter flounder is always a deep down, bottom feeder. They often bury themselves in mud or sand with only their eyes showing and lie in ambush. Therefore, the popular rig is a spreader and two hooks tied six inches above the sinker. I prefer a rig that allows a more sensitive touch. Tie a snelled hook two inches above the sinker and to this tie another half way up the snell.

Flounder lie in the deeper holes and depressions of channels during low tide and wait for food to be carried to them. As soon as the tide begins to flood, they scatter over the mud and sandflats in search of food washed in by the tide. Best place to look for them is a mud flat broken here and there by eel grass. Other spots are around docks, harbors, inner channels, tidal rivers and bays, rock jetties, bridge abutments, sea walls, tidal gates and shore fronts facing open water. They are partial to mud and sand.

Flounder are interested in food that crawls and creeps, so take pains to make your bait do this by lifting your rod tip gently and lowering it, instead of jerking the bait along bottom. If fish don't bite readily, a good trick is to put a large sinker on a cod line and toss it way out, then pull it back across your fishing area so it kicks up a lot of sand or mud. Flounder will hurry over to investigate, see your bait and think it's a free lunch. Drift trolling in a row boat is another good method. Keep your bait bouncing along bottom at the same speed as the water is moving and you'll strike it rich. Chumming helps at times. Fill an old citrus fruit net bag with

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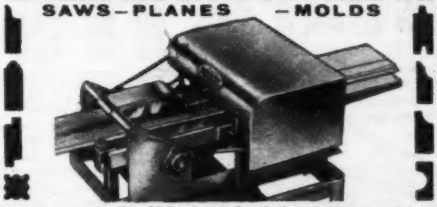

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crushed clams, mussels or cut fish and lower it into a good flounder hole or channel.

Luckily nature made the flounder a prolific spawner and a fast-maturing fish, or the big commercial trawlers would have wiped them out long ago. The females lay from half a million to a million and a half eggs a year. This spawn develops into normal-appearing fish with eyes on both sides of the head. However, as they grow, one eye begins to move around to the other side. Usually the bottom side of a flounder is white and the top a color that matches the sea floor. Winter flounder have both eyes on the right side and summer flounder have both on the left. The winter flounder has a small, sucker-like mouth and the summer fish a large mouth filled with sharp, ripping teeth. Both will give you the time of your life.

Good luck and happy fishing. •

Two-Way Radio

[*Continued from page* 59]

seven or eight if either end is well elevated) and from ten to 15 miles over clear stretches of water. As in all radio communication, there is bound to be some mutual interference and the FCC suggests that cooperation, patience and brevity will contribute to the success of the service.

Since a typical transmitter-receiver combination is only about the size of two cigar boxes and works economically off a storage battery, Class D is obviously made-to-order for short-range mobile and portable voice radio. The boat field is the largest immediate market seen by manufacturers, since radio afloat is not merely a convenience but a safety measure. For contacts between commercial vehicles and central offices, the service will supplement older radio dispatching systems. About the only factor that will limit its application between private automobiles and the home, at least for a while, is cost. Present minimum price per unit is about $100 and, of course, two are needed. Prices will undoubtedly drop as production increases.

Class D equipment will easily pay its way in many fields. Consider how it might solve the common problem of controlling traffic into large parking lots. Winding in and out of the aisles on a radio-fitted scooter, a rider could spot unoccupied spaces and call them to the gate, where a

man could direct incoming cars to them.

On large construction projects, engineers and foremen could direct activities over wide areas, moving men and material around with no lost motion.

At sporting events, Class D networks to meet any requirements of vehicular or pedestrian control can be organized or shifted in short order to meet changing conditions.

At road races and rallies, which are being held in increasing number every year, mobile stations reporting to a control point could keep judges, spectators and participants well informed on all happenings and would assist in traffic regulation.

A mobile station doesn't even have to be motorized. In the Chicago Stock Yards there is already a mounted cowboy who has a two-way unit slung from his saddle and he performs valuable work in herding animals where they are supposed to go.

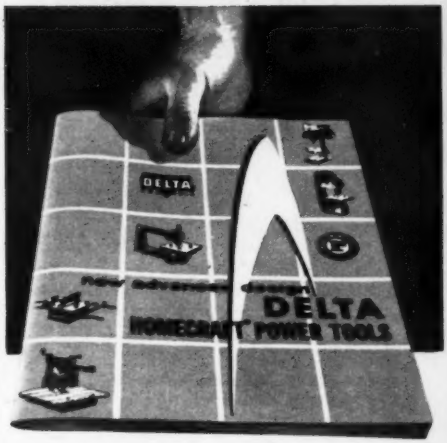
In large warehouses, having miles of corridors, messengers and stock clerks riding muscle-powered tricycles could receive instructions via radio and report back the same way, at a considerable saving in time and effort.

The first Citizens Band Class D unit to make an impression on the public was the RCA Radio-Phone which was given a big play in television commercials. This is a four-tube job, with a self-contained telescoping antenna that opens to about three feet. It weighs only ten pounds and costs about $125. It works on either house AC or storage battery, so is suitable for both fixed and mobile purposes. It has no tuning controls but is factory-adjusted to one channel. Absolutely no technical knowledge or skill is required. To transmit, you push a button on a hand microphone and talk; to receive, you release the button.

Also appearing quickly was the Kaar IMP, a much more elaborate instrument weighing 22 pounds. A fixed station model, for AC only, costs $320; a 6/12 volt battery version, $328. As with the RCA set, operation is fully push-to-talk on one channel. Class D equipment is also being released by Gonset, Morrow and International Crystal.

Apparently all initial Class D stations will be single channel, at the choice of the customer. If you intend to set up a small network of several stations, they must all be for the same channel. Sets of different

[*Continued on page* 163]



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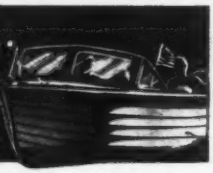

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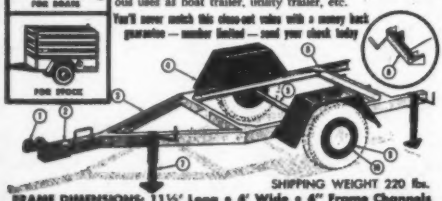

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Two-Way Radio

[*Continued from page* 161]

makes marked for a common channel will inter-communicate perfectly. Multi-channel sets are not now available, although there is no reason (except cost) why they cannot be built. They certainly are desirable, as they could offer alternate channels if one happens to be overcrowded.

All equipment in immediate sight uses conventional tubes and not transistors, probably because tubes are cheaper and more reliable for transmitting purposes. However, it is fairly safe to predict that next year will see the appearance of truly portable, pocket-size, completely transistorized stations, powered by long-lived mercury batteries. They'll be expensive but that won't keep a lot of people from buying them.

The ignition systems of all gasoline-powered engines create noisy radio signals that can often be heard half a mile away on a sensitive receiver. From the standpoint of ordinary broadcast reception in a car or boat, they can be suppressed by a regulator. These suppressors are so cheap that they have been included as standard equipment in practically all cars of recent years. In most cases, however, they do not fully kill off interference on the 11-meter short-wave band used in the Class D service. Just how effective they are in any particular car can be determined only by experimenting with an actual station. Generally, the interference is moderate at idling speeds and can be tolerated if the vehicle is stationary, the location quiet and the received signals fairly strong.

If full radio communication in motion is desired, additional suppression is almost always necessary. This takes the form of more capacitors and a few noise filters, which are added one at a time to elements of the electrical system until the interference disappears or at least is minimized. Sometimes a single ten-cent capacitor connected to the gas gauge does the trick. You can readily do the work yourself, possibly with assistance of a radio-ham friend.

The basic Class D sets have their antennas sticking directly out of their cases and therefore must be used pretty much out in the open. This is no problem in small boats, which are open anyway, or on trac-

[*Continued on page* 165]

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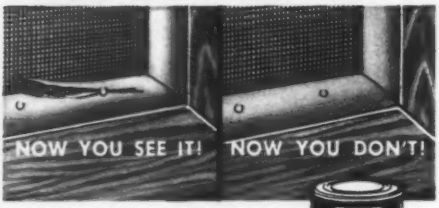

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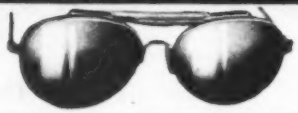

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Two-Way Radio

[*Continued from page* 163]

tors, bulldozers, scooters, motorcycles, bicycles, horses, wagons, etc. Installing or removing a complete station takes only seconds, as there are only two battery wires to clip or unclip.

There is a choice of operating methods with closed vehicles. If only casual communication or contact by schedule is planned, you don't even have to worry about ignition suppression. Merely carry the station on a seat or on the floor. When you want to go on the air, stop the car, set up the equipment on the roof or a fender, pull out the antenna, and connect the battery cable to the cigarette lighter receptacle.

For full mobile operation, you can readily mount the unit under the dash of a passenger car or on a shelf behind the front seats of a truck. A couple of bolts are all that are necessary. You must also install an external antenna on a bumper or fender and connect it to the set by a length of suitable cable. Antenna kits designed to make this job fast and simple are obtainable as station accessories.

How much antenna is needed at a fixed station depends on the terrain and the required range of communication. In summer bungalows and boat houses near the water, the self-contained whip might be entirely adequate. A roof antenna will give much greater talking range.

Service and maintenance on equipment of this low power is no problem at all.

That's the two-way radio story as of this moment. The whole field is new and expanding rapidly. So many manufacturers are interested that by fall of '59 there will probably be a dozen different sets on the market to choose from. And, of course, as production gets into high gear, undoubtedly the price will come down.

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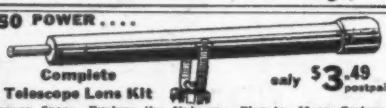

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MIDWAY COMPANY Dept. TM1-5 KEARNEY, NEBR.

The Third Wire

[*Continued from page* 142]

To make an AC-DC chassis safe, it is necessary to identify the chassis line-cord by test with any simple continuity checker. Wire and insert the plug into the receptacle so that the ground side of the plug goes into the ground side of the receptacle. Two-prong polarized plugs are made, but they are not generally available. It is easier to use one of the three-prong plugs, which are polarized and can enter the receptacle only one way. •

(In addition to credits shown elsewhere we would like to extend our thanks to Belden Mfg. Co., M. Black Mfg. Co., Eagle Electric Mfg. Co., Harvey Hubbell Inc., Pass & Seymour Inc., and Royal Electric Corp. for their help in the preparation of this story. Ed.)

Orbits

[*Continued from page* 145]

guards, Explorers, and other machines zipping around the earth in 95 minutes, are examples of this. The farther out a moon is, the slower it goes, our own real one consumes 27⅓ days for a single circuit. A space observation station could therefore be placed to revolve simultaneously with the earth's daily rotation and thus hover above a chosen continent indefinitely.

* * *

There will be a stunning conjunction of the moon and the planet Jupiter over the Western Hemisphere on Friday night, May 22. Closest apparent approach, with the planet only a few lunar diameters south, for United States Observers, occurs at 12:43 a.m., Saturday, Central time. Jupiter will be just four days past opposition and very brilliant; the moon is only seven hours short of full phase at the time, and eight hours from perigee.

—*Peter A. Leavens*

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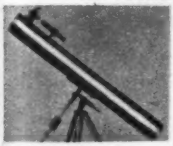

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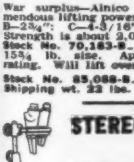

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- ☐ Stationary Fireman

TEXTILE
- ☐ Carding and Spinning
- ☐ Cotton Manufacture
- ☐ Cotton Warping and Weaving
- ☐ Loom Fixing Technician
- ☐ Textile Designing
- ☐ Textile Finishing & Dyeing
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WITH THE

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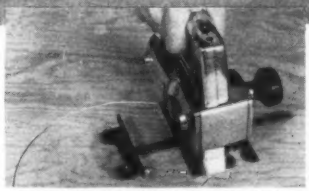
MOST VERSATILE SAW YOU CAN OWN.



Cut Perfect Circles. With circle guide attachment you can make a cutout quickly, easily, and perfectly in the center of almost any material. Makes inside cuts without starting hole and blade breakage.

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10 Piece SAW KIT

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Cut Accurate Angles. Up to 45° with exclusive angle base . . . Scroll-work, contour cutting made with professional results.

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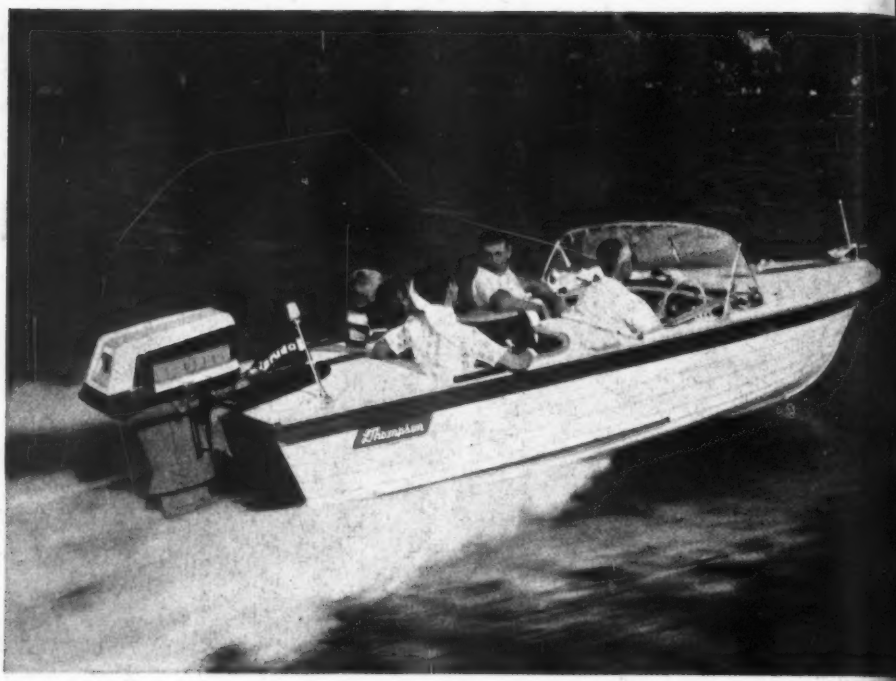
Cut 2x4's in 8 second flat! Also, plastics a all kinds of compos tions.



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